



**2021 Annual  
Monitoring Report**  
**Former Murray Smelter Site**  
**Murray, Utah**

Prepared for:  
**ASARCO Multi-State Environmental Custodial Trust**

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## Acronyms and Abbreviations

%Ds	percent differences
ALS	ALS Group USA Corp. dba ALS Environmental
CCV	closing calibration verification
DERR	Utah Division of Environmental Response and Remediation
DO	dissolved oxygen
IAPM	Intermediate Aquifer Performance Monitoring
ICV	initial calibration verifications
LCS	laboratory control standard
MFG	McCulley, Frick & Gilman, Inc.
MDL	method detection limit
MS	matrix spike
MSD	matrix spike duplicate
NAM	Natural Attenuation Monitoring
NELAC	National Environmental Laboratory Accreditation Conference
ORP	oxidation-reduction potential
Pace	Pace Analytical Services, LLC
QC	quality control
Ramboll	Ramboll US Consulting, Inc.
RCM	Repository Compliance Monitoring
RDM	Repository Detection Monitoring
RDR	Remedial Design Report
RL	reporting limit
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SAPM	Shallow Aquifer Performance Monitoring
Site	Murray Smelter Site
SWPM	Surface Water Performance Monitoring
TDS	total dissolved solids
Trust	Asarco Multi-State Environmental Custodial Trust
UDEQ	Utah Department of Environmental Quality
USEPA	United States Environmental Protection Agency
UTA	Utah Transit Authority
%R	percent recoveries

# 1 Introduction

Ramboll US Consulting, Inc. (Ramboll), on behalf of the ASARCO Multi-State Environmental Custodial Trust (Trust), has prepared this Annual Monitoring Report for the 2021 monitoring event conducted at the former Murray Smelter Superfund Site (the “Site”) located approximately 6 miles south of Salt Lake City at the northwest corner of State Street and 53rd South Street (Figure 1) in Murray, Utah. The monitoring is conducted over the entire Superfund Site. The Trust owns two small parcels on the western side of the Superfund Site (Figure 1), which is the location of the “Parking Repository” (Figure 2). The other on-site repository, the “Roadway Repository,” is owned by the City of Murray (Figure 2).

The 2021 annual monitoring event field activities were conducted from August 30 through September 2, 2021. The field, laboratory, and reporting procedures used for the 2021 annual monitoring event were obtained from the *Sampling and Analysis Plan for Groundwater and Surface Water Monitoring Programs* initially prepared by McCulley, Frick & Gilman, Inc. (MFG) on October 31, 2000, as modified by Ramboll Environ on December 12, 2016 (SAP; Ramboll Environ, 2016) and as modified by Ramboll on May 12, 2019 (SAP; Ramboll, 2019).

According to the SAP, monitoring will be performed as part of the on-facility<sup>1</sup> remedy to:

- Demonstrate attainment of performance standards for groundwater and surface water;
- Evaluate the long-term performance of natural attenuation; and
- Meet the requirements for groundwater monitoring associated with the on-facility system for Category II materials.

There are six monitoring programs at the Site:

1. Shallow Aquifer Performance Monitoring (SAPM);
2. Natural Attenuation Monitoring (NAM);
3. Intermediate Aquifer Performance Monitoring (IAPM);
4. Repository Detection Monitoring (RDM);
5. Repository Compliance Monitoring (RCM); and
6. Surface Water Performance Monitoring (SWPM).

During the 2021 annual monitoring event, five of the six monitoring programs (SAPM, NAM, IAPM, RDM, and SWPM) were conducted. RCM is only required when RDM data indicate that a statistically significant increase in one or both of the Site indicator parameters (sulfate and arsenic) has been observed. A statistical data evaluation was completed for the June 2014

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<sup>1</sup> The “on-facility” area includes the former operational areas of the Murray Smelter and adjacent Germania Smelter; its boundaries are 5300 South Street to the south, State Street to the East, Little Cottonwood Creek to the north and the west set of the Denver & Rio Grande Western railroad tracks to the west. The “off-facility” area includes the surrounding residential and commercial areas where air dispersion and deposition modelling indicated airborne emissions from the smelters impacted the environment or where contamination in shallow groundwater may be transported in the future.

through June 2017 monitoring reports presented in the 2018 Statistical Report (Ramboll, 2018a), which indicated there was not a statistically significant increase in the indicator parameters. Consequently, RCM sampling was not conducted during the 2021 annual sampling event. The statistical data evaluation is conducted after four annual monitoring events and the next statistical evaluation will be completed in 2022. Per the direction of the USEPA and UDEQ, and in accordance with the SAP (Ramboll Environ, 2019), SWPM shall be conducted once every five years. SWPM sampling was conducted during the 2014 through 2016 annual sampling events and also conducted during the 2021 monitoring event. SWMP sampling will next be conducted during the 2026 monitoring event.

## **2 Methods and Procedures**

### **2.1 Groundwater Elevation Measurements**

Potentiometric surface elevation measurements were collected from a total of 20 monitoring wells and two piezometers on August 30, 2021 in advance of groundwater purging/sampling activities. The potentiometric surface elevation for IPM-3 was collected on September 2, 2021 due to access restrictions on Utah Transit Authority (UTA) property. The groundwater hydraulic monitoring points for the shallow aquifer and intermediate aquifer are shown on Figures 2 and 3, respectively. The monitoring well construction details are summarized in Table 1, and the potentiometric surface elevations are provided in Table 2. Potentiometric surface maps for the shallow and intermediate aquifers are shown on Figures 4 and 5, respectively.

### **2.2 Monitoring Well Sampling**

Groundwater samples were collected from 21 monitoring wells from August 31 through September 2, 2021. The groundwater sampling locations are shown on Figures 2 and 3 for the shallow and intermediate aquifers, respectively. Table 3 provides a list of the wells sampled, including sampling methods and laboratory analyses performed.

Monitoring well sampling was conducted using methods as outlined in the SAP, *i.e.*, using low-flow drawdown techniques (Puls & Barcelona, 1996). Well purging was conducted at low-flow rates between 100 and 200 milliliters per minute. Monitoring wells were purged and sampled using either peristaltic pumps with dedicated tubing or dedicated bladder pumps. Water quality parameters (*i.e.*, temperature, pH, conductivity, oxidation-reduction potential [ORP], turbidity, and dissolved oxygen [DO]) were monitored during purging using a Horiba U-52 low-flow water quality meter with a flow-through cell. Turbidity was also monitored using a LaMotte Turbidity Meter. The Horiba U-52 and LaMotte Turbidity Meter were operated, calibrated, and maintained in the field in accordance with the manufacturer's specifications. Each well was considered stable when three successive readings of  $\pm 10\%$  specific conductivity,  $\pm 0.05$  pH, and  $\pm 1$  °C temperature were collected in accordance with the SAP; all other parameters<sup>2</sup> are stabilized within  $\pm 10\%$ . Groundwater purge and sampling information was recorded on the groundwater sampling logs provided in Appendix A.

Immediately after sample collection, the laboratory-supplied containers were labelled and placed in an ice-cooled insulated cooler for storage pending delivery to the laboratory under proper chain of custody protocol. Groundwater samples were submitted to Pace Analytical Services, LLC (Pace) of Mt. Juliet, Tennessee, a National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory, for analysis.

### **2.3 Surface Water Sampling**

Per direction of the USEPA and the Utah Division of Environmental Response and Remediation (DERR) and in accordance with the SAP (Ramboll Environ, 2019), SWPM shall be conducted once every five years. SWPM sampling was conducted during 2021 annual monitoring event and it will not be performed again until the 2026 annual monitoring event. Surface water sampling is performed at three locations: the upstream boundary of the Site (SW-13), within the

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<sup>2</sup> Not required per the SAP, adhered to as a best practice.

Site boundary (SW-15) and downstream of the Site boundary (SW-5). Surface water sampling locations are shown on Figure 6. The point of compliance for the Performance Standards is SW-5. Table 4 provides a list of the surface water sampling locations along with the sampling methods and laboratory analyses performed.

Surface water sampling consisted of grab samples collected at each of the three stream locations. Samples were collected with the use of a peristaltic pump and tubing from the middle of each stream sampling location at half of the mid-stream water depth. Following sample collection (to mitigate stream bed disturbance prior to sample collection), a single temperature, pH, conductivity, ORP, turbidity, and DO reading was collected using a Horiba U-52 water quality meter. An OTT MF Pro was used to measure stream flow at the three locations. Surface water field measurements for each monitoring location were recorded on the surface water sampling logs included in Appendix B.

Immediately after sample collection, laboratory-supplied containers were labeled and placed in an ice-cooled insulated cooler for storage, pending delivery to the laboratory under proper chain-of-custody protocol. For the 2021 monitoring event, surface water samples were submitted to Pace of Mt. Juliet, Tennessee, a NELAC certified laboratory, for analysis. Dissolved arsenic III in surface water samples from the 2021 monitoring event were submitted to ALS Group USA Corp. dba ALS Environmental (ALS) of Kelso, Washington, a NELAC certified laboratory, for analysis (ALS Group was used for the analysis of dissolved arsenic III as this is a specialized laboratory analysis that Pace does not perform).

## 2.4 Analytical and Data Validation Methods

Pace and ALS<sup>3</sup> analyzed the 2021 groundwater and surface water samples using United States Environmental Protection Agency (USEPA) SW846 Methods:

- SM 2320B for alkalinity;
- SW 9056A for chloride and sulfate;
- SM 2540C for total dissolved solids (TDS);
- USEPA 6010B for dissolved calcium, magnesium, potassium, and sodium;
- USEPA 6020 for arsenic and selenium; and
- USEPA 1632A for dissolved arsenic III.

Laboratory analyses were performed in accordance with the SAP.

Ramboll validated the 2021 annual groundwater analytical data in accordance with the USEPA guidance document *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540-R-2017-001 (USEPA, 2017). In accordance with the validation program that has historically been used at the Site, shallow and intermediate groundwater samples from the SPM and IPM designated monitoring wells (including monitoring wells MW-10, MW-11 and

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<sup>3</sup> ALS analyzed for dissolved arsenic III in surface water samples only.

MW-12) were validated following USEPA Level III guidelines and samples from the remaining MW-designated monitoring wells were validated following USEPA Level IV guidelines.

## **3 Results**

### **3.1 Groundwater Elevations**

As discussed above, the shallow and intermediate groundwater elevations measured during the 2021 annual monitoring event are listed in Table 2 and depicted on Figures 4 and 5. As shown on the figures, groundwater in the shallow aquifer was measured as flowing to the north, and in the intermediate aquifer the groundwater measurements indicate flow to the northwest. These groundwater flow directions are consistent with those measured during prior monitoring events.

### **3.2 Field Data Results**

The stabilized groundwater quality parameter measurements for each well were collected at the end of the well purging and immediately prior to sample collection are summarized in Table 5. The surface water quality parameter measurements taken immediately following sample collection are summarized in Table 6.

### **3.3 Groundwater and Surface Water Sample Results**

From August 31 through September 2, 2021, groundwater samples were collected from 21 monitoring wells and three surface water samples were collected from three locations along Little Cottonwood Creek associated with the former Murray Smelter Site in accordance with the monitoring programs described in Section 1. The validated groundwater and surface water sample results for the SAPM, NAM, IAPM, RDM, and SWMP programs are summarized in Tables 7 through 11, respectively. Duplicate groundwater samples were collected from three sample locations (SPM-1, IPM-1, MW-4UR) as part of the annual groundwater sampling. The compounds detected in the analytical samples and their duplicates were detected at relatively similar concentrations as shown in Table 7, 9, and 10. Calculated relative percent differences (RPDs) for parent sample and field duplicate results were within 30%. The laboratory reports are provided in Appendix C.

The SAP requires that monitoring reports indicate any exceedances of the appropriate prediction limits by the RDM data. Prediction limits were generally calculated for the baseline year of sampling data and for each subsequent year. The Remedial Design Report (RDR) only allows an annual update of the prediction limit under two conditions: 1) no increasing trend observed in the data, or 2) increasing trend observed in the data, but a homogeneous trend detected in the well pair. A homogeneous trend (in the context of the former Murray Smelter Site) is a similar trend that is seen in both up and downgradient paired wells. In general, the paired wells are located on either side of the repository. Therefore, if an increase is observed in arsenic concentrations in the downgradient well but not the upgradient well, this would be evidence of a potential release from the repository. An upward trend in both of the paired wells (homogeneous trend) also indicates a possible release. However, it should be clarified that an upward homogeneous trend may potentially be due to an offsite source which would require further investigation and evaluation.

Monitoring reports have been completed on an annual basis following the 2013 EPA and UDEQ determination that annual, not quarterly, sampling shall be conducted. A comparison between the prediction limits and the 2021 annual monitoring groundwater sample results was performed as summarized on Table 12. Prediction limits are calculated every four years or four data sets,

whichever comes first. The last prediction limit was calculated in 2021 and was calculated using data from the four most recent annual monitoring events (2018, 2019, 2020, and 2021). For the 2021 monitoring event, the collected data indicate the following results:

- There were no exceedances of the appropriate prediction limits for sulfate.
- The 2021 arsenic result for MW-1D, MW-2D, and MW-4D did not exceed the prediction limits calculated for these wells.
- A prediction limit for arsenic for MW-3D was not calculated in the 2021 statistical evaluation as there was a divergent increasing trend observed or the upper prediction limit was exceeded; however, the 2016 MW-3D prediction limit for arsenic was 0.0025 mg/L, which was exceeded in 2021.

As previously indicated, a comparison of the RDM data from the monitoring reports is made to the appropriate prediction limits and reported in accordance with the approved monitoring program specifications. According to the SAP, individual exceedances of the prediction limits will not be interpreted as evidence of releases from the repository, but instead will be evaluated as part of the statistical data evaluation following the collection of four sets of data.

### **3.4 Quality Assurance/Quality Control Sample Results and Data Validation**

The scope of work for data validation included a review of all sampling field forms; custody documentation; laboratory quality control (QC), including instrument calibration, check standards, blanks, and laboratory control samples; and application of data qualifiers. Recalculation of data was not performed; however, QC and calibration documentation was reviewed as warranted.

The data validation verified the following for Metals by USEPA Methods 6010B and 6020:

- Technical Holding Times/Sample Preservation – All technical holding time requirements were met for metals analysis. All samples were received within the required preservation criteria for pH, with the exception of samples submitted for dissolved metals analyses. Samples submitted for dissolved metals analysis were field-filtered and preserved at the laboratory before analysis.
- Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Tune – The percent relative standard deviations (%RSDs) for ICP-MS tunes were within the acceptance criteria.
- Initial and Continuing Calibration – An initial calibration was performed. Initial calibrations met the acceptance criteria for linearity. The frequency and analysis criteria of the initial calibration verifications (ICVs) and closing calibration verifications (CCVs) associated with project samples were met.
- Blanks – Instrument and preparation blanks were reviewed for any detections. No detections above the method detection limits were detected in any preparation or instrument blanks associated with the reported results in this data set, with one exception. Total selenium was detected at 0.000606 milligrams per liter (mg/L) in one preparation blank and dissolved arsenic was detected at 0.000185 mg/L in a separate preparation blank associated with the samples in this data set. The blank results were

qualified “J” as estimated because the concentrations were below the reporting limit (RL). All associated results were greater than 10x the concentration in the method blanks; therefore, the results are not likely biased due to laboratory contamination and no data were qualified.

- LCS – Laboratory control samples were reviewed for each preparation batch. All recoveries were within laboratory control limits.
- Matric Spike (MS) / Matrix Spike Duplicate (MSD) – Project-specific samples were submitted for MS/MSDs as part of this data set. MS/MSDs for total arsenic, total selenium, dissolved arsenic, dissolved selenium, dissolved calcium, dissolved magnesium, dissolved potassium, and dissolved sodium were prepared from sample SPM-3B-210831. MS/MSDs for total arsenic and dissolved arsenic were prepared from sample MW-1U-210901. The MS/MSD recoveries were within control limits, with the exception that the recoveries for dissolved calcium and dissolved sodium were outside the laboratory acceptance criteria for the MS/MSD prepared from sample SPM-3B-210831. However, the concentrations of these parameters in the unspiked sample were significantly greater (more than 4x) than the spike concentrations; therefore, the recoveries were not evaluated for accuracy and no data were qualified.
- Internal Standards – All internal standard percent recoveries were within QC criteria and met retention time criteria.
- Serial Dilution – Serial dilution percent differences (%Ds) were assessed for project-specific samples. The serial dilution %Ds were below 10% for concentrations that were 50x the method detection limit (MDL) or higher.
- Field Duplicates – Three sets field duplicates: IPM-1-210831/IPM-15-210831, SPM-1-210831/SPM-15-210831, and MW-4UR-210831/MW-45UR-210831 were submitted with this data set for metals analysis. Relative percent differences (RPDs) calculated for parent sample and field duplicate results were within 30%. IPM-1-210831 is reported between the laboratory RL and MDL (i.e., “J” qualified), thus the RPD with IPM-15-210831 cannot be calculated.
- Sample Result Verification – All compound and target identifications were acceptable. Results reported between the laboratory RL and MDL were qualified “J” as estimated.
- Sample Receipt – Metals samples collected for this site have historically been analyzed by USEPA Methods 200.7 and 200.8. Samples in this data set were analyzed for metals by USEPA 6010B and 6020, due to a laboratory login error. The methods differ slightly in preparation and QC criteria; however, the methods are USEPA approved methods for water analysis, utilize the same instrumentation, and are capable of reporting the same sensitivity in aqueous matrices. The 2021 sample results analyzed in 2021 by USEPA Methods 6010B and 6020 were compared to minimum and maximum concentration ranges of samples obtained during 2018 through 2020 analyzed by USEPA Methods 200.7 and 200.8. In most cases, the concentrations reported in 2021 were within the historical concentration ranges for data collected during previous sampling events. In addition, an evaluation of the time series for arsenic presented in the 2018 – 2021 Data Evaluation Report (Ramboll 2022) do not indicate that any of the results reported in 2021 were likely outliers compared to the historical data set presented in the time series.

Therefore, the 2021 data set analyzed by USEPA Methods 6010B and 6020 were determined to comparable to the historical data set analyzed by USEPA Methods 200.7 and 200.8 and the nonconformance was determined not to significantly impact the data.

- Completeness – 100% of the planned data were deemed valid for this sampling event.

The data validation verified the following for Wet Chemistry Methods (Alkalinity, TDS, Chloride, and Sulfate):

- Technical Holding Times/Sample Preservation – All technical holding time requirements were met for wet chemistry analyses. All samples were received within the required temperature preservation.
- Initial and Continuing Calibration – All criteria for initial calibration of each method were met. When required, continuing calibration frequency and analysis requirements were met.
- Blanks – No contaminants were detected in and reported laboratory method or instrument blanks.
- LCS – Laboratory control samples were reviewed for each preparation batch. All recoveries were within laboratory control limits.
- MS/MSD – Project-specific samples were submitted for MS/MSDs as part of this data set. MS/MSDs for chloride and sulfate were prepared from sample SPM-3B-210831. The recoveries for chloride were below the control limits for the MS/MSDs; however, the concentrations in the unspiked samples were significantly greater (more than 4x) than the spike concentrations. In these cases, the recoveries were not evaluated for accuracy and no data were qualified.
- Laboratory Duplicates – Laboratory duplicates, when required by the method, were reviewed. RPDs were within laboratory control limits.
- Field Duplicates – Field duplicate pairs IPM-1-210831/IPM-15-210831 and SPM-1-210831/SPM-15-210831 were analyzed for TDS, alkalinity, chloride, and sulfate; and field duplicate pair MW-4UR-210831/MW-45UR-210831 was analyzed for TDS and sulfate. Calculated RPDs for parent sample and field duplicate results were within 30% for wet chemistry analyses.
- Sample Result Verification – All sample result verifications were acceptable. The result for sulfate for sample IPM-3-210902 was reported between the laboratory RL and MDL and was qualified “J” as estimated.
- Completeness – 100% of the planned data were deemed valid for this sampling event.

A copy of the complete validation report (Ramboll, 2021) is available upon request. Based on Ramboll’s evaluation, the analytical data included in this data set are usable as qualified.

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## Tables

**TABLE 1**

**Summary of Monitoring Well Construction Details**  
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**Former Murray Smelter Site**

Monitoring Well ID	Monitoring Program	Aquifer	Total Depth (feet bgs)	Screened Interval (feet bgs)	Screen Length (feet)
IPM-1	IAPM	Intermediate	77.67	69-79	10
IPM-2	IAPM	Intermediate	79.07	72-82	10
IPM-3	IAPM	Intermediate	93.28	84.5-94.5	10
IPM-4	Abandoned on 6/28/2017				
IPM-5	IAPM	Intermediate	88.03	78-88	10
MW-1D	RDM / NAM	Shallow	23.20	8-23	15
MW-1U	RDM	Shallow	23.81	7-22	15
MW-2D	RDM	Shallow	22.52	13-23	10
MW-2U	RDM / NAM	Shallow	22.79	8-23	15
MW-3D	RDM / NAM	Shallow	15.63	6-16	10
MW-3U	RDM	Shallow	22.10	7-22	15
MW-4D	RDM	Shallow	31.55	8-28	20
MW-4UR	RDM	Shallow	29.00	19-29	10
MW-5D	RDM	Shallow	30.35	15.35-30	15
MW-10	NAM	Shallow	16.80	6.8-16.8	10
MW-11	NAM	Shallow	15.00	5-15	10
MW-12	Abandoned on 7/16/2018				
MW-12R	NAM	Shallow	11.60	4.1-11.6	7.5
SPM-1	SAPM	Shallow	18.81	9-19	10
SPM-2b	SAPM	Shallow	17.50	7.5-17.5	10
SPM-3b	SAPM	Shallow	23.50	8.5-23.5	15
SPM-4b	SAPM	Shallow	20.55	10.55-20.55	10
SPM-5	SAPM	Shallow	28.02	19-29	10

**Notes:**

bgs = below ground surface  
IAPM = Intermediate aquifer performance monitoring  
RDM = Repository detection monitoring  
NAM = Natural attenuation monitoring  
SAPM = Shallow aquifer performance monitoring  
--- = Information not available

TABLE 2

**Potentiometric Surface Elevations**  
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Monitoring Well ID	Monitoring Program	Aquifer	TOC Elevation (feet AMSL)	2021 Depth to Water (feet bgs)	Q3 2021 Potentiometric Surface Elevation (feet AMSL)	Q2 2020 Potentiometric Surface Elevation (feet AMSL)	Q2 2019 Potentiometric Surface Elevation (feet AMSL)	Q2 2018 Potentiometric Surface Elevation (feet AMSL)	Q2 2017 Potentiometric Surface Elevation (feet AMSL)	Q2 2016 Potentiometric Surface Elevation (feet AMSL)	Q2 2015 Potentiometric Surface Elevation (feet AMSL)	Potentiometric Surface Elevation Historic High (feet AMSL)	Potentiometric Surface Elevation Historic Low (feet AMSL)
IPM-1	IAPM	Intermediate	4,311.60	32.42	4,279.18	4,281.66	4,283.35	4,278.84	4,279.64	4,282.34	4,282.81	4,286.06	4,276.76
IPM-2	IAPM	Intermediate	4,296.27	24.62	4,271.65	4,273.61	4,275.19	4,271.49	4,272.36	4,274.32	4,274.72	4,277.67	4,270.96
IPM-3	IAPM	Intermediate	4,299.68	45.91 <sup>1</sup>	4,253.77	4,255.43	4,257.37	4,253.80	4,254.28	4,256.50	4,256.92	4,262.20	4,253.80
IPM-5	IAPM	Intermediate	4,287.53	31.90	4,255.63	4,257.25	4,259.18	4,255.88	4,256.59	4,257.56	4,258.88	4,258.88	4,255.88
MW-1D	RDM / NAM	Shallow	4,314.39	9.53	4,304.86	4,304.04	4,307.82	4,304.32	4,305.58	4,306.31	4,306.76	4,310.18	4,302.09
MW-1U	RDM	Shallow	4,318.08	13.48	4,304.60	4,304.32	4,307.99	4,304.72	4,305.89	4,306.23	4,305.99	4,312.07	4,303.35
MW-2D	RDM	Shallow	4,313.30	11.33	4,301.97	4,301.70	4,304.07	4,301.84	4,302.79	4,303.09	4,303.31	4,305.09	4,299.20
MW-2U	RDM / NAM	Shallow	4,313.84	10.33	4,303.51	4,303.74	4,306.65	4,303.63	4,304.93	4,305.43	4,305.86	4,307.99	4,301.53
MW-3D	RDM / NAM	Shallow	4,299.62	12.41	4,287.21	4,288.14	4,290.95	4,288.59	4,289.12	4,288.03	4,289.89	4,295.42	4,285.17
MW-3U	RDM	Shallow	4,311.50	13.46	4,298.04	4,298.95	4,301.82	4,299.08	4,300.30	4,300.30	4,299.87	4,304.17	4,296.40
MW-4D	RDM	Shallow	4,296.58	23.08	4,273.50	4,274.54	4,274.94	4,273.80	4,275.03	4,274.14	4,274.16	4,276.18	4,271.66
MW-4UR	RDM	Shallow	4,299.78	18.97	4,280.81	4,278.13	4,279.21	4,278.27	4,278.48	4,278.45	4,278.33	4,279.66	4,277.85
MW-5D	RDM	Shallow	4,288.41	17.90	4,270.51	4,271.82	4,272.14	4,270.70	4,272.50	4,271.65	4,271.19	4,274.11	4,269.68
MW-10	NAM	Shallow	4,312.22	7.06	4,305.16	4,305.17	4,305.27	4,305.17	4,304.88	4,305.06	4,305.70	4,306.67	4,304.87
MW-11	NAM	Shallow	4,308.89	8.07	4,300.82	4,300.85	4,301.47	4,300.78	4,301.18	4,301.62	4,301.97	4,302.21	4,300.55
MW-12	NAM	Shallow	4,283.90		Abandoned				4,278.89	4,279.63	4,279.75	4,279.97	4,276.74
MW-12R	NAM	Shallow	4,286.64	7.46	4,279.18	4,279.23	4,279.67	4,279.04					Not installed
SPM-1	SAPM	Shallow	4,297.93	13.42	4,284.51	4,284.36	4,287.41	4,285.09	4,284.88	4,284.39	4,284.03	4,288.19	4,282.03
SPM-2b	SAPM	Shallow	4,308.61	10.93	4,297.68	4,297.22	4,299.03	4,297.11	4,297.42	4,297.89	4,298.68	4,299.89	4,288.85
SPM-3b	SAPM	Shallow	4,277.80	3.71	4,274.09	4,275.36	4,275.84	4,274.52	4,270.15	4,275.93	4,274.68	4,277.19	4,270.15
SPM-4b	SAPM	Shallow	4,280.20	9.51	4,270.69	4,272.21	4,272.61	4,271.15	4,277.98	4,271.95	4,271.48	4,277.98	4,270.38
SPM-5	SAPM	Shallow	4,288.32	22.92	4,265.40	4,266.89	4,267.01	4,265.84	4,267.16	4,265.92	4,265.57	4,271.41	4,265.34
PZ-2	SAPM	Shallow	4,282.41	Dry	N/A	4,270.68	4,271.47	4,271.10	4,271.10	4,271.63	4,270.58	4,278.27	4,269.54
PZ-3b	SAPM	Shallow	4,280.52	17.24	4,263.28	4,264.81	4,265.94	4,265.11	4,265.11	4,265.61	4,264.30	4,265.61	4,261.62

**Notes:**

AMSL = Above mean sea level

bgs = below ground surface

IAPM = Intermediate aquifer performance monitoring

RDM = Repository detection monitoring

<sup>1</sup> = Water level collected on September 2, 2021 due to UTA Access

NAM = Natural attenuation monitoring

SAPM = Shallow aquifer performance monitoring

TOC = Top of casing

--- = not measured during event

**TABLE 3**  
**Summary of Ground Water Samples Collected and Analyzed**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Location	Sample Identification	Sample Collection Date	Monitoring Program	Aquifer	Sampling Method	Analysis	Laboratory
IPM-1	IPM-1-210831	8/31/2021	IAPM	Intermediate	Low-flow: Bladder pump	Dissolved As, Ca, Mg, K, Na Total As TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
IPM-2	IPM-2-210831	8/31/2021	IAPM	Intermediate	Low-flow: Bladder pump	Dissolved As, Ca, Mg, K, Na Total As TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
IPM-3	IPM-3-210902	9/2/2021	IAPM	Intermediate	Low-flow: Bladder pump	Dissolved As, Ca, Mg, K, Na Total As TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
IPM-5	IPM-5-210901	9/1/2021	IAPM	Intermediate	Low-flow: Bladder Pump	Dissolved As, Ca, Mg, K, Na Total As TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
MW-1D	MW-1D-210901	9/1/2021	RDM / NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-1U	MW-1U-210901	9/1/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-2D	MW-2D-210831	8/31/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-2U	MW-2U-210831	8/31/2021	RDM / NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-3D	MW-3D-210831	8/31/2021	RDM / NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-3U	MW-3U-210831	8/31/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-4D	MW-4D-210831	8/31/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-4UR	MW-4UR-210831	8/31/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-5D	MW-5D-210901	9/1/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-10	MW-10-210902	9/2/2021	NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-11	MW-11-210901	9/1/2021	NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
MW-12	Abandoned on 7/16/2018						
MW-12R	MW-12R-210901	9/1/2021	NAM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
SPM-1	SPM-1-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
SPM-2b	SPM-2b-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
SPM-3b	SPM-3b-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
SPM-4b	SPM-4b-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
SPM-5	SPM-5-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
<b>QA/QC Samples</b>							
SPM-1	SPM-15-210831	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
IPM-1	IPM-15-210831	8/31/2021	IAPM	Intermediate	Low-flow: Bladder pump	Dissolved As, Ca, Mg, K, Na Total As TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
MW-4UR	MW-45UR-210831	8/31/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical
SPM-3b	SPM-3b-210831 (MS/MSD)	8/31/2021	SAPM	Shallow	Low-flow: Peristaltic pump	Dissolved As, Se, Ca, Mg, K, Na Total As, Se TDS, Sulfate, Alkalinity, Chloride	Pace Analytical
MW-1U	MW-1U-210901 (MS/MSD)	9/1/2021	RDM	Shallow	Low-flow: Peristaltic pump	Dissolved As Total As TDS, Sulfate	Pace Analytical

**Notes:**

IAPM = Intermediate aquifer performance monitoring

RDM = Repository detection monitoring

NAM = Natural attenuation monitoring

SAPM = Shallow aquifer performance monitoring

QA/QC = Quality Assurance / Quality Control

Se = Selenium

As = Arsenic

Ca = Calcium

Mg = Magnesium

K = Potassium

Na = Sodium

TDS = Total dissolved solids

Pace Analytical = Pace Analytical Services, LLC

**TABLE 4**  
**Summary of Surface Water Samples Collected and Analyzed**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Location	Sample Identification	Sample Collection Date	Monitoring Program	Aquifer	Sampling Method	Analysis	Laboratory
SW-5	SW-5-210901	9/1/2021	SWPM	Surface Water	Grab: Peristaltic pump	Dissolved As (III)	ALS
						Dissolved As, Total Dissolved Solids, Total Suspended Solids, Sulfate	Pace Analytical
SW-13	SW-13-210901	9/1/2021	SWPM	Surface Water	Grab: Peristaltic pump	Dissolved As (III)	ALS
						Dissolved As, Total Dissolved Solids, Total Suspended Solids, Sulfate	Pace Analytical
SW-15	SW-15-210901	9/1/2021	SWPM	Surface Water	Grab: Peristaltic pump	Dissolved As (III)	ALS
						Dissolved As, Total Dissolved Solids, Total Suspended Solids, Sulfate	Pace Analytical

**Notes:**

SWPM = Surface Water performance monitoring

As = arsenic

Pace Analytical = Pace Analytical Services, LLC

ALS = ALS Group USA Corp. dba ALS Environmental

**TABLE 5**  
**Summary of Stabilized Field Parameter Measurements (Groundwater)**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Well	Sampling Date	Volume Purged (liters)	Water Temperature (°C)	pH (Standard Units)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)	Dissolved Oxygen* (mg/L)	Total Dissolved Solids (g/L)	Turbidity (NTU)
IPM-1	8/31/2021	13.0	17.96	8.01	54	1.67	1.13	1.07	1.69
IPM-2	8/31/2021	15.0	19.34	8.35	-277	1.21	0.32	0.77	15.80
IPM-3	9/2/2021	12.0	18.59	7.70	-252	0.93	0.32	0.60	2.71
IPM-5	9/1/2021	8.6	18.42	7.85	-142	0.62	1.36	0.40	1.22
MW-1D	9/1/2021	10.0	19.47	7.22	80	3.35	0.50	2.14	0.33
MW-1U	9/1/2021	14.0	21.91	7.19	120	3.05	0.34	1.95	1.16
MW-2D	8/31/2021	12.0	23.08	7.95	40	3.90	0.90	2.49	0.93
MW-2U	8/31/2021	10.0	22.83	7.64	9	3.56	0.34	2.28	1.61
MW-3D	8/31/2021	10.0	24.20	8.87	-80	2.73	0.40	1.75	1.06
MW-3U	8/31/2021	10.8	16.71	7.12	37	3.95	0.50	2.53	0.62
MW-4D	8/31/2021	9.0	23.97	8.17	-35	4.66	0.27	2.99	0.79
MW-4UR	8/31/2021	12.0	32.66	7.78	39	0.02	3.72	0.01	0.48
MW-5D	9/1/2021	9.6	22.42	8.31	16	3.55	5.07	2.27	0.28
MW-10	9/2/2021	9.4	20.78	7.17	97	3.33	0.94	2.13	0.39
MW-11	9/1/2021	9.4	21.72	7.22	39	2.90	1.96	1.85	0.35
MW-12R	9/1/2021	15.0	21.09	7.28	-35	3.06	0.39	1.96	1.13
SPM-1	8/31/2021	11.6	19.76	7.62	145	3.79	1.84	2.43	0.00
SPM-2b	8/31/2021	10.6	19.93	7.70	126	1.09	1.68	0.70	0.00
SPM-3b	8/31/2021	11.8	20.84	8.28	-221	0.73	0.70	0.47	0.00
SPM-4b	8/31/2021	12.6	19.23	8.05	-184	2.49	0.55	1.60	1.54
SPM-5	8/31/2021	14.6	19.93	8.27	-167	2.77	1.35	1.77	6.83

**Notes:**

mS/cm = Millisiemens per centimeter

NTU = Nephelometric Turbidity Units

g/L = Grams per liter

mg/L = Milligrams per liter

°C = Degrees Celsius

mV = Millivolts

\* = DO accuracy +/- 0.2-0.5 mg/L

**TABLE 6**  
**Summary of Stabilized Field Parameter Measurements (Surface Water)**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Well	Sampling Date	Water Temperature (°C)	pH (Standard Units)	Oxidation Reduction Potential (mV)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Discharge (cfs)
SW-5	9/1/2021	19.32	7.70	119	2.23	8.09	1.43	63.30	11.52
SW-13	9/1/2021	19.18	8.38	77	2.25	8.39	1.44	72.90	11.59
SW-15	9/1/2021	19.86	8.58	81	2.22	10.39	1.42	68.00	10.05

**Notes:**

mS/cm = Millisiemens per centimeter  
 NTU = Nephelometric Turbidity Units  
 mg/L = Milligrams per liter  
 °C = Degrees Celsius  
 mV = Millivolts  
 cfs = Cubic feet per second

**TABLE 7**  
**Summary of Monitoring Well Sample Results**  
**Shallow Aquifer Performance Monitoring Program**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Well Sample ID Comment	SPM-1 SPM-1-210831	SPM-15 SPM-15-210831 Field Duplicate	SPM-2b SPM-2b-210831	SPM-3b SPM-3b-210831 (MS/MSD)	SPM-4b SPM-4b-210831	SPM-5 SPM-5-210831
Date Units	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L
Alkalinity	445	438	388	332	434	316
Chloride	1,180	1,150	92.0	323	644	785
Sulfate	201	204	154	87.0	127	250
TDS	2,490	2,410	769	1,030	1,650	1,790
Arsenic (total)	0.00514	0.00551	0.00196 J	0.0407	0.0609	0.303
Arsenic (dissolved)	0.00522	0.00515	0.00183 J	0.0398	0.0598	0.293
Calcium (dissolved)	186	184	89.3	93.6 *	165	185
Magnesium (dissolved)	114	115	60.3	42.7	54.1	64.1
Potassium (dissolved)	24.9	24.9	12.0	14.9	23.0	39.2
Selenium (total)	0.0187	0.0168	0.0120	<0.000300	<0.000300	<0.000300
Selenium (dissolved)	0.0173	0.0185	0.0114	<0.000300	<0.000300	<0.000300
Sodium (dissolved)	533	533	83.3	214 *	337	352

**Notes:**

Arsenic MCL = 0.01 mg/L

mg/L = milligrams/liter

< = Constituent was not detected above the PQL

PQL = Practical quantitation limit

MS/MSD = Matrix Spike / Matrix Spike Duplicate

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ = The result is an estimated quantity, but the result may be biased high.

\* = Data validation report indicated no issue with the data, lab reported the sample concentration is too high to evaluate accurate spike recoveries

**TABLE 8**  
**Summary of Monitoring Well Sample Results**  
**Natural Attenuation Monitoring Program**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Well Sample ID Comment	MW-1D MW-1D-210901	MW-2D MW-2D-210831	MW-3D MW-3D-210831	MW-10 MW-10-210902	MW-11 MW-11-210901	MW-12R MW-12R-210901
Date Units	9/1/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	9/2/2021 mg/L	9/1/2021 mg/L	9/1/2021 mg/L
Sulfate	607	334	179	360	210	199
TDS	2,230	2,310	1,780	2,020	1,760	1,860
Arsenic (total)	2.23	1.47	0.322	21.5	0.0951	0.534
Arsenic (dissolved)	2.21	1.54	0.317	23.2	0.0802	0.495

**Notes:**

Arsenic MCL = 0.01 mg/L  
mg/L = milligrams/liter

**TABLE 9**  
**Summary of Monitoring Well Sample Results**  
**Intermediate Aquifer Performance Monitoring Program**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Well Sample ID Comment	IPM-1 IPM-1-210831	IPM-15 IPM-15-210831 Field Duplicate	IPM-2 IPM-2-210831	IPM-3 IPM-3-210902	IPM-5 IPM-5-210901
Date Units	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	9/2/2021 mg/L	9/1/2021 mg/L
Alkalinity	295	300	189	186	381
Chloride	304	304	205	201	156
Sulfate	103	103	118	0.859 J	67.0
TDS	984	984	696	680	381
Arsenic (total)	0.00101 J	0.00216	0.00719	0.00525	0.0354
Arsenic (dissolved)	0.00103 J	0.00132 J	0.00406	0.00532	0.0348
Calcium (dissolved)	148	146	117	100	56.5
Magnesium (dissolved)	47.0	47.4	34.2	22.3	23.6
Potassium (dissolved)	4.75	4.80	5.20	8.21	9.56
Sodium (dissolved)	108	108	59.3	36.8	25.1

**Notes:**

Arsenic MCL = 0.01 mg/L

mg/L = milligrams/liter

< = Constituent was not detected above the PQL

PQL = Practical quantitation limit

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 10

**Summary of Monitoring Well Sample Results  
Repository Detection Monitoring Program  
2021 Annual Report  
Former Murray Smelter Site**

Well Sample ID Comment Date Units	MW-1U MW-1U-210901 (MS/MSD)	MW-1D MW-1D-210901	MW-2U MW-2U-210831	MW-2D MW-2D-210831	MW-3U MW-3U-210831	MW-3D MW-3D-210831	MW-4UR MW-4UR-210831	MW-45UR MW-45UR-210831 Field Duplicate	MW-4D MW-4D-210831	MW-5D MW-5D-210901										
	9/1/2021 mg/L	9/1/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	8/31/2021 mg/L	9/1/2021 mg/L										
Sulfate	773		607		655		334		308		179		387		386		367		431	
TDS	2,210		2,230		2,490		2,310		2,310		1,780		3,570		3,830		2,930		2,580	
Arsenic (total)	6.14		2.23		0.00566		1.47		0.0189		0.322		0.0439		0.0441		0.0247		1.08	
Arsenic (dissolved)	6.13 *		2.21		0.00201		1.54		0.0164		0.317		0.0422		0.0457		0.0223		1.08	

**Notes:**

Arsenic MCL = 0.01 mg/L

mg/L = milligrams/liter

&lt; = Constituent was not detected above the PQL

PQL = Practical quantitation limit

MS/MSD = Matrix Spike / Matrix Spike Duplicate

\* = Data validation report indicated no issue with the data, lab reported the sample concentration is too high to evaluate accurate spike recoveries

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

**Table 11**

**Summary of Surface Water Sample Results**  
**Surface Water Performance Monitoring Program**  
**2021 Annual Report**  
**Former Murray Smelter Site**

Location*	SW-5 SW-5-210901	SW-13 SW-13-210901	SW-15 SW-15-210901
Sample ID	9/1/2021 mg/L	9/1/2021 mg/L	9/1/2021 mg/L
Comment			
Date			
Units			
Sulfate	346	342	347
TDS	1,410	1,380	1,400
TSS	19.2	23.4	21.7
Arsenic (dissolved) <sup>3</sup>	0.0215	0.0163	0.0189
Arsenic III (dissolved) <sup>1 &amp; 2</sup>	0.00190	0.00117	0.00116

**Notes:**

mg/L = milligrams/liter

\* Listed from upgradient to downgradient

<sup>1</sup> = Acute Numeric Criteria for Aquatic Life = 0.34 mg/L

<sup>2</sup> = Chronic Numeric Criteria for Aquatic Life = 0.15 mg/L

<sup>3</sup> = Agricultural Use Standards for Surface Water = 0.10 mg/L

**TABLE 12**

**Comparison of Sulfate and Arsenic Results with Calculated Prediction Limits  
Repository Detection Monitoring program  
2021 Annual Report  
Former Murray Smelter Site**

Monitoring Well	Sulfate (mg/L)		Total Arsenic (mg/L)	
	Prediction Limit	2021 Result	Prediction Limit	2021 Result
MW-1D	1,064	607	4.68*	2.23
MW-2D	546.6	334	8.173	1.47
MW-3D	804**	179	X	0.322
MW-4D	540**	367	0.300**	0.0247

**Notes:**

mg/L = milligrams/liter

Prediction Limit calculated in 2018

\* = Data was not normal so log transform was performed to determine UPL

\*\* = Data was not normal or log-normal so UPL was replaced with maximum observation

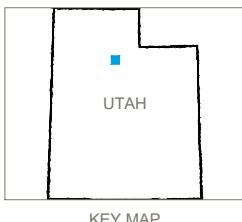
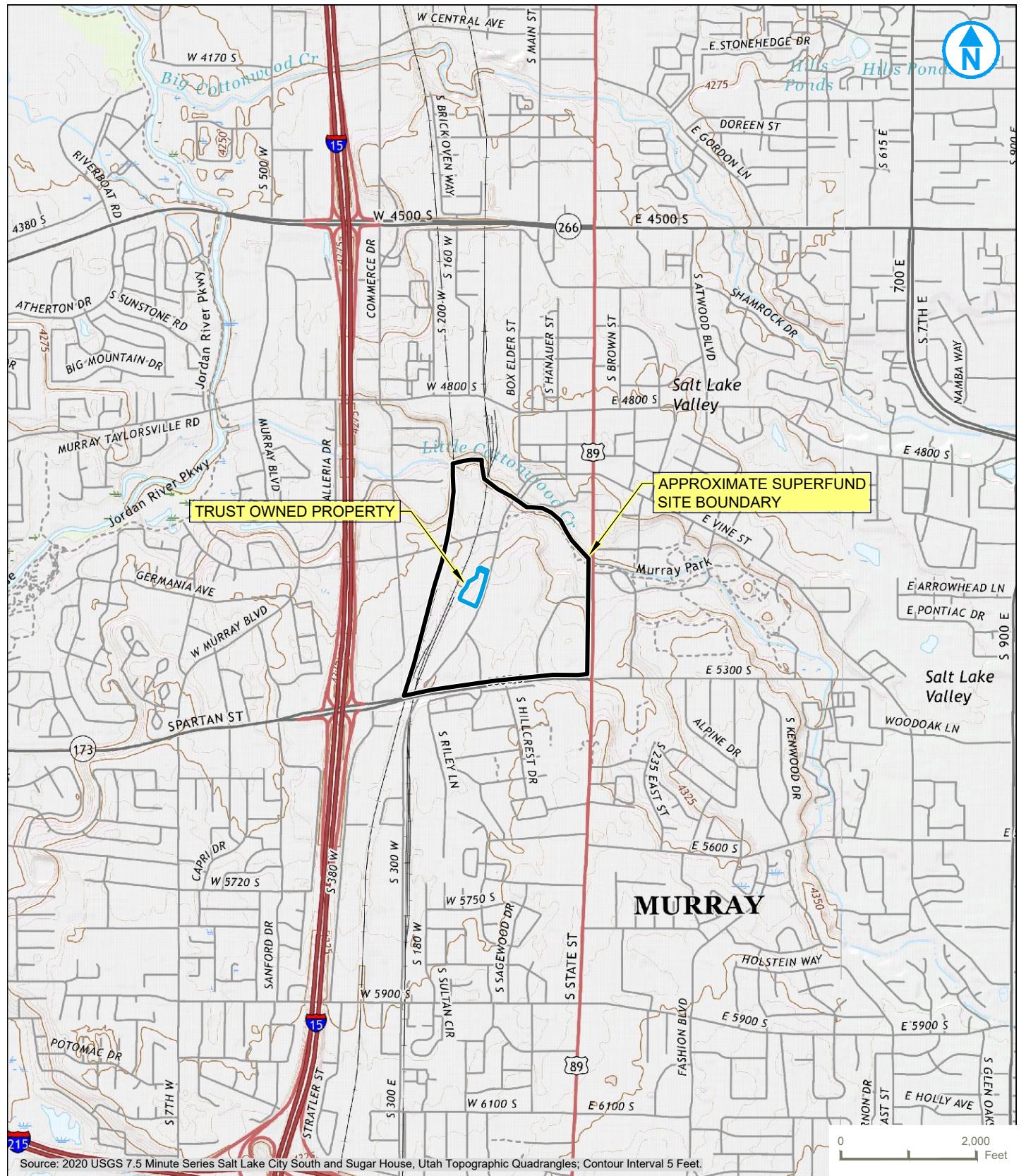
X = UPL was not recalculated because divergent increasing trend was observed or UPL was exceeded

In accordance with the "Remedial Design Report for Groundwater and Surface Water Monitoring" (RDR), the UPL for MW-3D was not updated because the trend for arsenic at that well was shown to be increasing non-homogeneously with its upgradient paired well. This non-homogeneous increasing trend is a possible indication of change in water quality that may be attributable to a release from the repository. It is also possibly the result of the increased turbidity observed in sample results collected in 2018. Since the results are anomalous, further sampling is required to determine the likely cause of the increase and these possibly anomalous results should not be included in updated baseline calculations.

Exceedances of the prediction limits on an annual basis will not be interpreted as evidence of releases from the repository.

Exceedances of the prediction limits will be evaluated as part of the annual statistical data analyses.

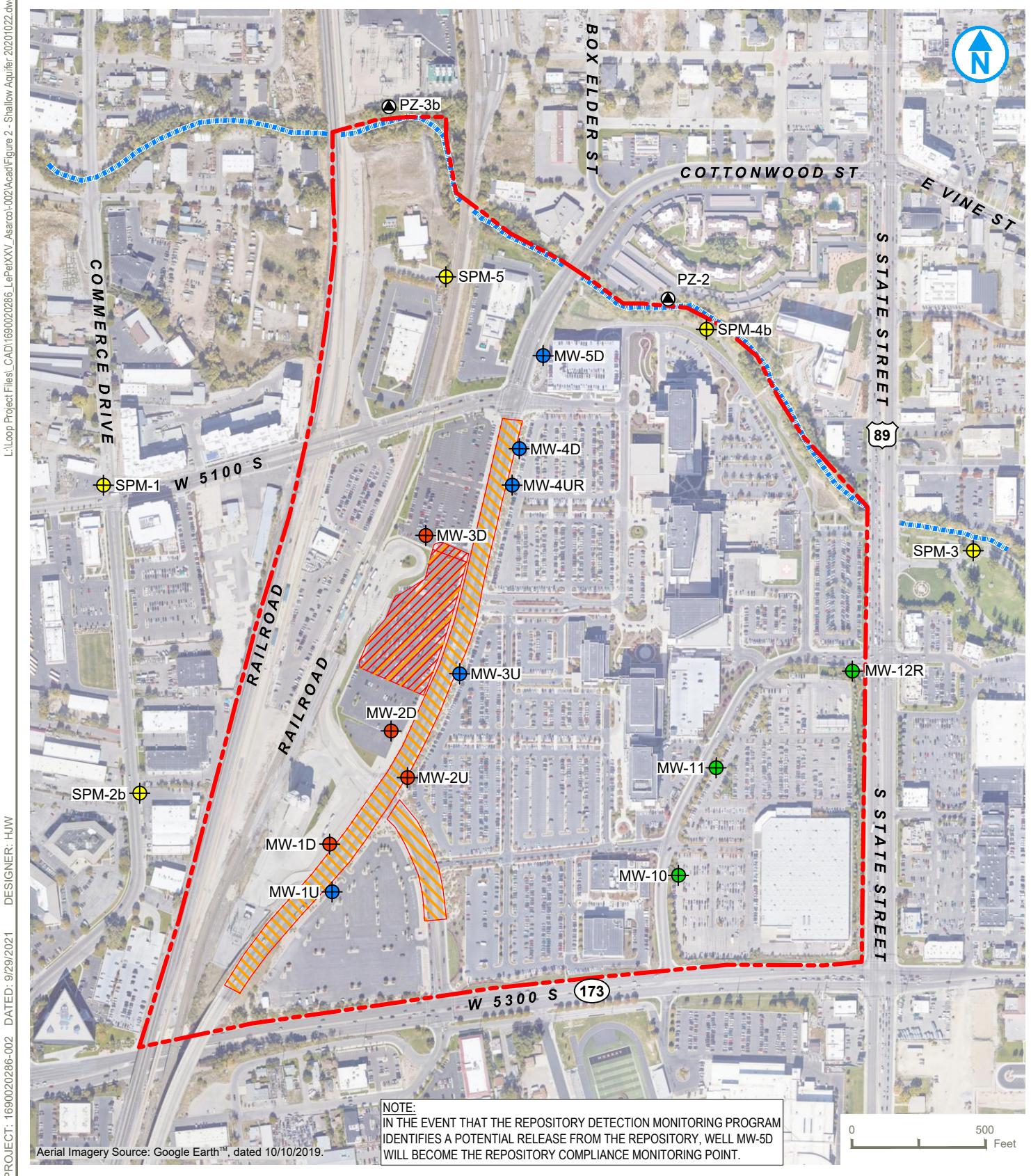
## Figures



SITE LOCATION MAP

FIGURE 1

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY



- APPROXIMATE SUPERFUND SITE BOUNDARY
- PARKING REPOSITORY OWNED BY THE TRUST
- ROADWAY REPOSITORY OWNED BY MURRAY CITY
- PIEZOMETER (SHALLOW AQUIFER)
- NATURAL ATTENUATION MONITORING
- REPOSITORY DETECTION MONITORING
- REPOSITORY DETECTION MONITORING & NATURAL ATTENUATION MONITORING
- PERFORMANCE MONITORING
- LITTLE COTTONWOOD CREEK

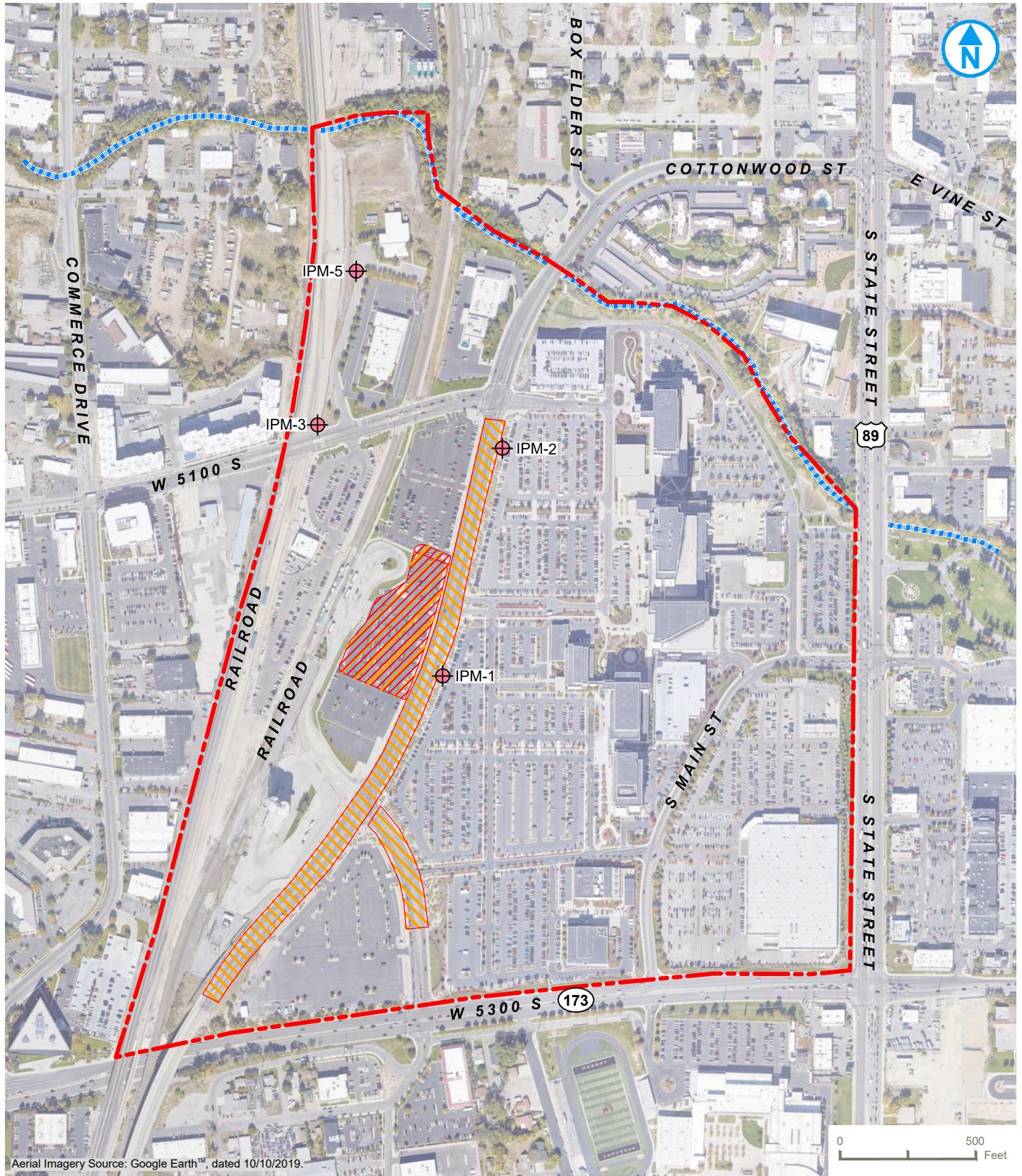
## SHALLOW AQUIFER GROUNDWATER INVESTIGATION SAMPLING LOCATIONS

FORMER MURRAY SMELTER SITE

**FIGURE 2**

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY

RAMBOLL



- APPROXIMATE SUPERFUND SITE BOUNDARY
- ▨ PARKING REPOSITORY OWNED BY THE TRUST
- ▨ ROADWAY REPOSITORY OWNED BY MURRAY CITY
- INTERMEDIATE AQUIFER PERFORMANCE MONITORING
- LITTLE COTTONWOOD CREEK

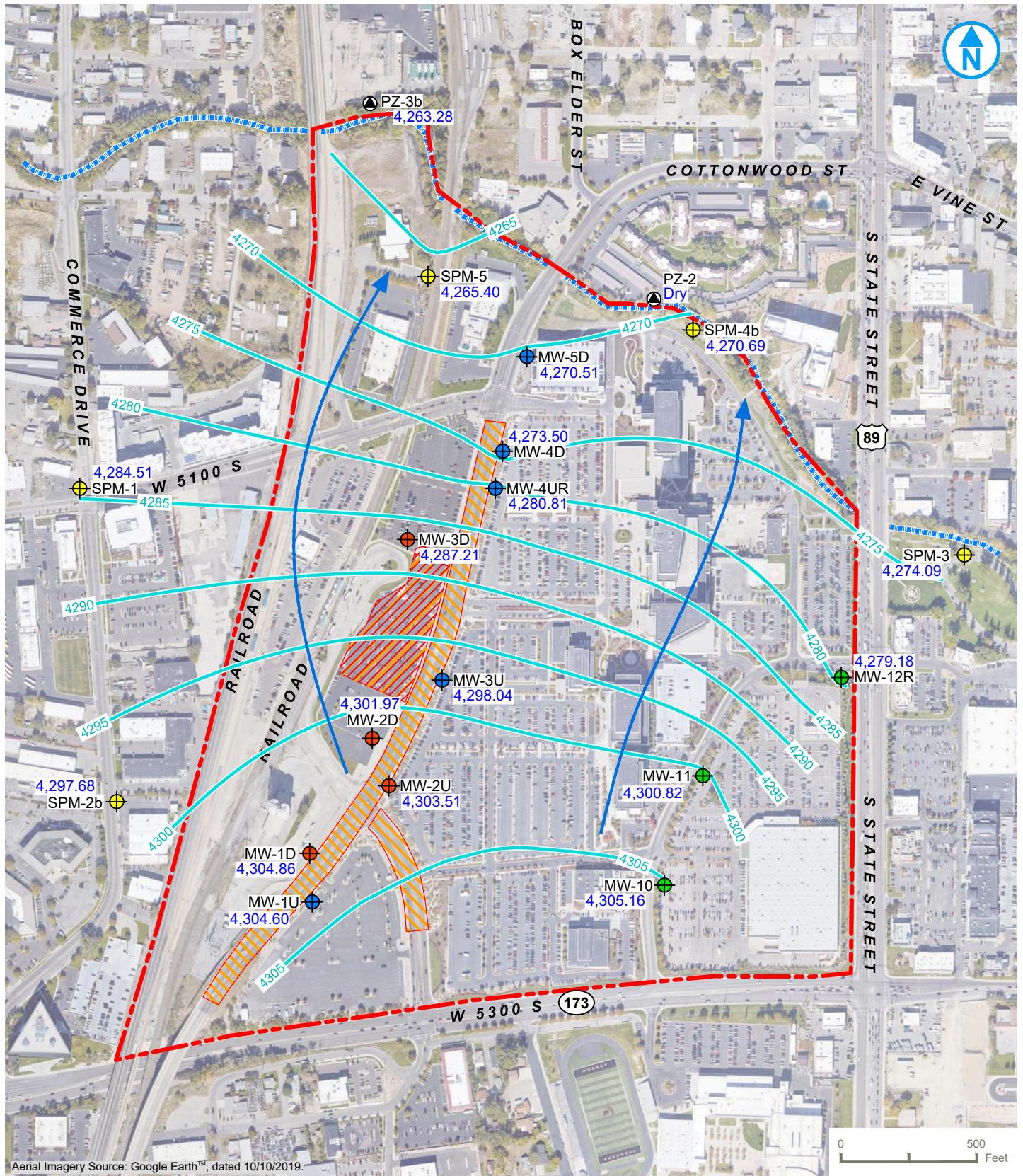
## INTERMEDIATE AQUIFER GROUNDWATER INVESTIGATION SAMPLING LOCATIONS

FORMER MURRAY SMELTER SITE

**FIGURE 3**

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY

RAMBOLL



- APPROXIMATE SUPERFUND SITE BOUNDARY
- PARKING REPOSITORY OWNED BY THE TRUST
- ROADWAY REPOSITORY OWNED BY MURRAY CITY
- PIEZOMETER (SHALLOW AQUIFER)
- NATURAL ATTENUATION MONITORING
- REPOSITORY DETECTION MONITORING
- REPOSITORY DETECTION MONITORING & NATURAL ATTENUATION MONITORING
- PERFORMANCE MONITORING
- 4300 GROUNDWATER CONTOUR (5 FT INTERVAL)
- 4,304.86 GROUNDWATER ELEVATION (FT AMSL)
- ← GROUNDWATER FLOW DIRECTION
- LITTLE COTTONWOOD CREEK

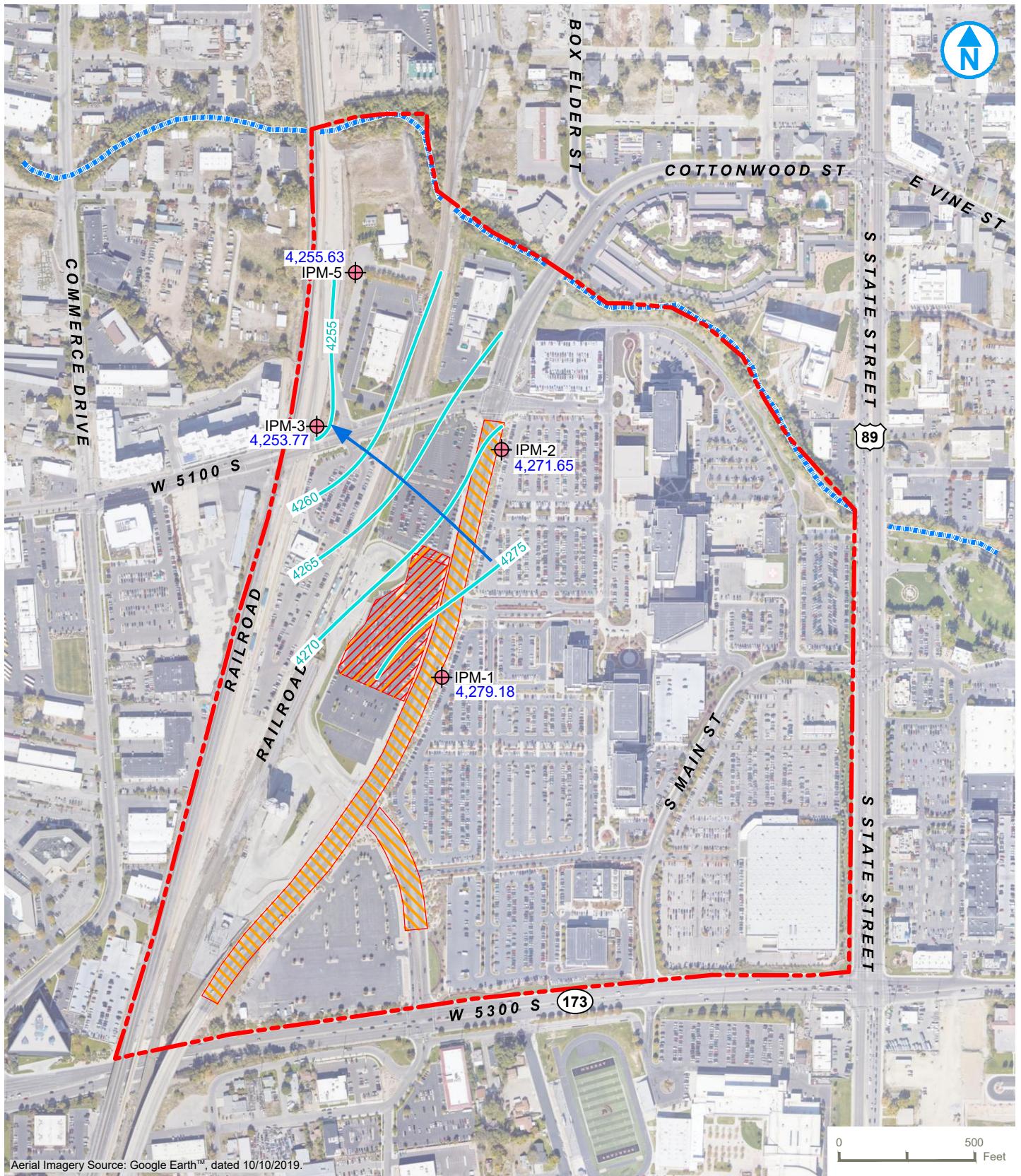
## ANNUAL 2021 SHALLOW AQUIFER POTENTIOMETRIC SURFACE MAP (AUGUST 30, 2021)

FORMER MURRAY SMELTER SITE

FIGURE 4

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY

RAMBOLL



- APPROXIMATE SUPERFUND SITE BOUNDARY
- PARKING REPOSITORY OWNED BY THE TRUST
- ROADWAY REPOSITORY OWNED BY MURRAY CITY
- INTERMEDIATE AQUIFER PERFORMANCE MONITORING
- 4280 — GROUNDWATER CONTOUR (5 FT INTERVAL)
- 4,255.63 — GROUNDWATER ELEVATION (FT AMSL)
- ← GROUNDWATER FLOW DIRECTION
- LITTLE COTTONWOOD CREEK

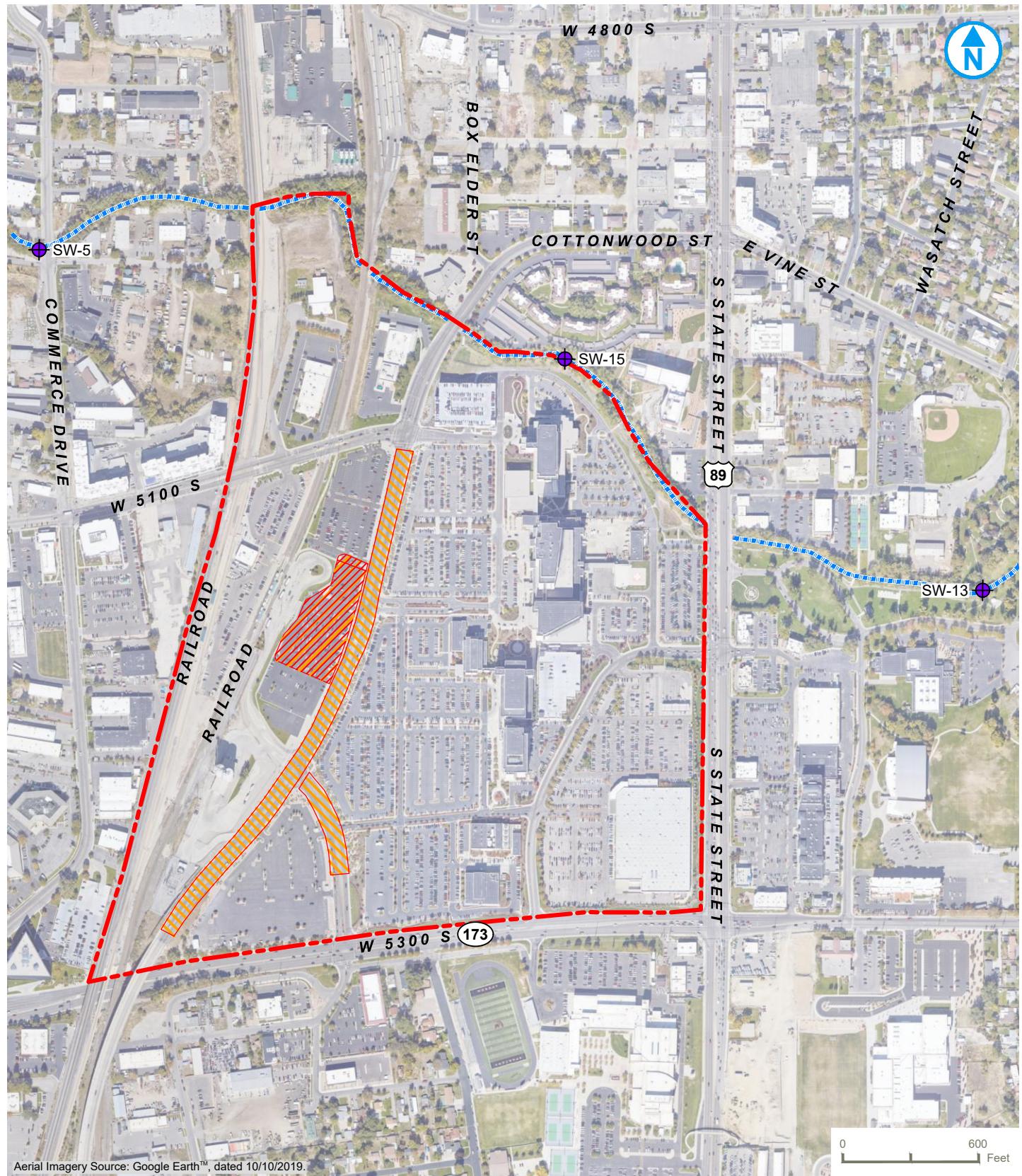
## ANNUAL 2021 INTERMEDIATE AQUIFER POTENTIOMETRIC SURFACE MAP (AUGUST 30, 2021)

FORMER MURRAY SMELTER SITE

**FIGURE 5**

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY

RAMBOLL



- APPROXIMATE SUPERFUND SITE BOUNDARY
- PARKING REPOSITORY OWNED BY THE TRUST
- ROADWAY REPOSITORY OWNED BY MURRAY CITY
- SURFACE WATER
- LITTLE COTTONWOOD CREEK

## SURFACE WATER INVESTIGATION SAMPLING LOCATIONS

FORMER MURRAY SMELTER SITE

FIGURE 6

RAMBOLL US CONSULTING, INC.  
A RAMBOLL COMPANY

RAMBOLL

## **Appendix A**

### **Groundwater Sampling Logs**

# WATER PURGING & SAMPLING LOG

# **WATER PURGING & SAMPLING LOG**



# **WATER PURGING & SAMPLING LOG**

# **WATER PURGING & SAMPLING LOG**

# WATER PURGING & SAMPLING LOG

Project Name: Former Murray Smelter Site	Well Number: MW-3D								
Project Number: 1690016007-001	Sample Date: 8/31/2021								
Project Location: Murray, UT	Weather Conditions: Sunny, 90°F								
Sampling Personnel: K. Carson									
<b>WELL / PURGING INFORMATION:</b>									
Purging Method: Peristaltic	Casing Radius (in.): 2.0"								
Sampling Method: Peristaltic	Depth to Water - TOC (ft.): 12.41								
Tubing Method: Dedicated	Depth to Bottom of Well - TOC (ft.): 15.63								
Purge Water Disposal Method: Drum	Casing Volume (gal.): 0.52								
<b>BLADDER PUMP CONTROL SETTINGS (if applicable):</b>									
Recharge Time (sec): --	Pressure (psi): --								
Discharge Time (sec): --	Cycles per minute: --								
Purge Start Time: 16:00	Purge Rate (mL/min): 200								
Purge Stop Time: 16:50	Purge Volume (liters): 10.0								
TIME	LITERS PURGED	Temp. (C )	pH (s.u)	ORP (mV)	Cond. (mS/cm)	DO * (mg/L)	TDS (g/L)	Turb. (NTU)	DTW (feet)
16:00	0.0								12.41
16:05	1.0	24.80	8.91	-91	2.51	0.63	1.61	0.81	12.71
16:10	2.0	24.77	9.01	-91	2.57	0.62	1.65	0.76	12.91
16:15	3.0	24.58	8.99	-89	2.57	0.53	1.65	1.32	12.92
16:20	4.0	24.53	8.99	-88	2.59	0.49	1.66	1.29	12.97
16:25	5.0	24.27	8.90	-85	2.66	0.44	1.70	1.45	13.08
16:30	6.0	24.27	8.89	-82	2.69	0.42	1.72	1.25	13.11
16:35	7.0	24.20	8.87	-80	2.73	0.40	1.75	1.06	13.15
SAMPLE ID: MW-3D-210831					SAMPLE APPEARANCE: Clear				
SAMPLE COLLECTION TIME: 16:40					LABORATORY NAME: Pace Analytical Services, LLC				
<b>OBSERVATIONS / COMMENTS:</b>									
* = DO accuracy +/- 0.2-0.5 mg/L									
<p>Collected:</p> <ul style="list-style-type: none"> <li>(1) 250 mL - Dissolved As</li> <li>(1) 250 mL - Total As</li> <li>(1) 250 mL - Sulfate</li> <li>(1) 1 L - TDS</li> </ul>									

# **WATER PURGING & SAMPLING LOG**

## **Appendix B**

### **Surface Water Sampling Logs**

## **SURFACE WATER SAMPLING LOG**

## **SURFACE WATER SAMPLING LOG**

## **SURFACE WATER SAMPLING LOG**

## **Appendix C**

### **Laboratory Analytical Reports**



# ANALYTICAL REPORT

September 17, 2021

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

## Ramboll US Consulting, Inc. - Denver

Sample Delivery Group: L1398905  
Samples Received: 09/03/2021  
Project Number: 1690016007-001  
Description: 5121 Cottonwood St.  
Site: FORMER MURRAY SMELTER  
Report To: Joel Krech  
1999 Broadway Suite 2225  
Denver, CO 80202

Entire Report Reviewed By:

Darren Reeder  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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<b>Cp: Cover Page</b>	<b>1</b>	<sup>1</sup> Cp
<b>Tc: Table of Contents</b>	<b>2</b>	<sup>2</sup> Tc
<b>Ss: Sample Summary</b>	<b>3</b>	<sup>3</sup> Ss
<b>Cn: Case Narrative</b>	<b>7</b>	<sup>4</sup> Cn
<b>Sr: Sample Results</b>	<b>8</b>	<sup>5</sup> Sr
SPM-2B-210831 L1398905-01	8	<sup>6</sup> Qc
IPM-1-210831 L1398905-02	9	<sup>7</sup> Gl
SPM-1-210831 L1398905-03	10	<sup>8</sup> Al
IPM-2-210831 L1398905-04	11	<sup>9</sup> Sc
IPM-3-210902 L1398905-05	12	
IPM-5-210901 L1398905-06	13	
SPM-3B-210831 L1398905-07	14	
SPM-4B-210831 L1398905-08	15	
MW-11-210901 L1398905-09	16	
SPM-5-210831 L1398905-10	17	
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SW-15-21-0901 L1398905-16	23	
SW-13-21-0901 L1398905-17	24	
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Gravimetric Analysis by Method 2540 D-2011	30	
Wet Chemistry by Method 2320 B-2011	31	
Wet Chemistry by Method 9056A	33	
Metals (ICP) by Method 6010B	35	
Metals (ICPMS) by Method 6020	36	
<b>Gl: Glossary of Terms</b>	<b>38</b>	
<b>Al: Accreditations &amp; Locations</b>	<b>39</b>	
<b>Sc: Sample Chain of Custody</b>	<b>40</b>	

# SAMPLE SUMMARY

Collected by Joel Krech	Collected date/time 08/31/21 08:30	Received date/time 09/03/21 08:00
SPM-2B-210831 L1398905-01 GW		

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 15:39	09/07/21 15:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 01:02	09/10/21 01:02	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:13	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:12	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 15:46	LD	Mt. Juliet, TN

IPM-1-210831 L1398905-02 GW	Collected by Joel Krech	Collected date/time 08/31/21 10:30	Received date/time 09/03/21 08:00
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 15:43	09/07/21 15:43	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 01:33	09/10/21 01:33	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:16	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:36	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 15:49	LD	Mt. Juliet, TN

SPM-1-210831 L1398905-03 GW	Collected by Joel Krech	Collected date/time 08/31/21 09:43	Received date/time 09/03/21 08:00
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 15:58	09/07/21 15:58	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 01:49	09/10/21 01:49	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	50	09/10/21 02:05	09/10/21 02:05	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:19	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:40	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 15:52	LD	Mt. Juliet, TN

IPM-2-210831 L1398905-04 GW	Collected by Joel Krech	Collected date/time 08/31/21 12:40	Received date/time 09/03/21 08:00
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 16:01	09/07/21 16:01	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 02:21	09/10/21 02:21	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:22	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:43	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 15:56	LD	Mt. Juliet, TN

IPM-3-210902 L1398905-05 GW	Collected by Joel Krech	Collected date/time 09/02/21 08:35	Received date/time 09/03/21 08:00
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Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1737786	1	09/09/21 17:06	09/09/21 18:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 16:05	09/07/21 16:05	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	1	09/10/21 02:36	09/10/21 02:36	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 02:52	09/10/21 02:52	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:24	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:46	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:09	LD	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 GI
- 8 Al
- 9 Sc

# SAMPLE SUMMARY

IPM-5-210901 L1398905-06 GW	Collected by		Collected date/time	Received date/time
	Joel Krech		09/01/21 14:23	09/03/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736120	1	09/07/21 16:08	09/07/21 16:08	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	1	09/10/21 03:40	09/10/21 03:40	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:32	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:50	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:13	LD	Mt. Juliet, TN

SPM-3B-210831 L1398905-07 GW	Collected by		Collected date/time	Received date/time
	Joel Krech		08/31/21 11:02	09/03/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736220	1	09/07/21 17:40	09/07/21 17:40	SL	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	1	09/10/21 03:56	09/10/21 03:56	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 04:44	09/10/21 04:44	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 11:33	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 11:48	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 15:32	LD	Mt. Juliet, TN

SPM-4B-210831 L1398905-08 GW	Collected by		Collected date/time	Received date/time
	Joel Krech		08/31/21 13:05	09/03/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736220	1	09/07/21 17:19	09/07/21 17:19	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	10	09/10/21 05:00	09/10/21 05:00	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:35	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:53	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:16	LD	Mt. Juliet, TN

MW-11-210901 L1398905-09 GW	Collected by		Collected date/time	Received date/time
	Joel Krech		09/01/21 08:17	09/03/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 05:16	09/10/21 05:16	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 12:57	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:20	LD	Mt. Juliet, TN

SPM-5-210831 L1398905-10 GW	Collected by		Collected date/time	Received date/time
	Joel Krech		08/31/21 18:15	09/03/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736220	1	09/07/21 17:43	09/07/21 17:43	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	20	09/10/21 05:47	09/10/21 05:47	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 05:32	09/10/21 05:32	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:38	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:00	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:23	LD	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

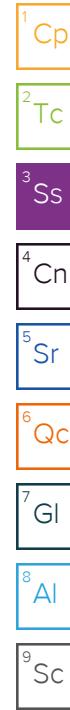
7 Gl

8 Al

9 Sc

# SAMPLE SUMMARY

			Collected by Joel Krech	Collected date/time 09/01/21 16:45	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 06:03	09/10/21 06:03	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:04	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:27	LD	Mt. Juliet, TN
<b>MW-10-210902 L1398905-12 GW</b>			Collected by Joel Krech	Collected date/time 09/02/21 07:50	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1737786	1	09/09/21 17:06	09/09/21 18:27	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	10	09/10/21 06:51	09/10/21 06:51	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	5	09/08/21 07:50	09/08/21 13:22	RDS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	5	09/08/21 10:34	09/08/21 16:52	LD	Mt. Juliet, TN
<b>IPM-15-210831 L1398905-13 GW</b>			Collected by Joel Krech	Collected date/time 08/31/21 10:15	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735717	1	09/06/21 11:47	09/07/21 17:12	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736220	1	09/07/21 17:50	09/07/21 17:50	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 07:07	09/10/21 07:07	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:41	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:25	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:34	LD	Mt. Juliet, TN
<b>SPM-15-210831 L1398905-14 GW</b>			Collected by Joel Krech	Collected date/time 08/31/21 09:30	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735717	1	09/06/21 11:47	09/07/21 17:12	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1736220	1	09/07/21 17:53	09/07/21 17:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 07:23	09/10/21 07:23	MSP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	50	09/10/21 07:39	09/10/21 07:39	MSP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735014	1	09/06/21 18:55	09/08/21 12:43	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:29	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736078	1	09/08/21 10:34	09/08/21 16:37	LD	Mt. Juliet, TN
<b>SW-5-21-0901 L1398905-15 GW</b>			Collected by Joel Krech	Collected date/time 09/01/21 10:45	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1736404	1	09/07/21 17:14	09/07/21 17:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 07:55	09/10/21 07:55	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:32	LAT	Mt. Juliet, TN

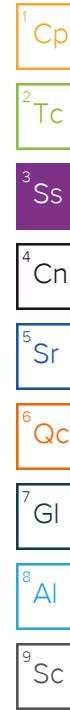


# SAMPLE SUMMARY

			Collected by Joel Krech	Collected date/time 09/01/21 12:15	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1736404	1	09/07/21 17:14	09/07/21 17:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 08:11	09/10/21 08:11	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:36	LAT	Mt. Juliet, TN

## SW-13-21-0901 L1398905-17 GW

			Collected by Joel Krech	Collected date/time 09/01/21 09:15	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736469	1	09/07/21 20:28	09/07/21 21:53	VRP	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1736404	1	09/07/21 17:14	09/07/21 17:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736923	5	09/10/21 08:27	09/10/21 08:27	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736056	1	09/08/21 07:50	09/08/21 13:39	LAT	Mt. Juliet, TN



# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Darren Reeder  
Project Manager

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> GI
- <sup>8</sup> AI
- <sup>9</sup> Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	769		13.3	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	388		8.45	20.0	1	09/07/2021 15:39	<a href="#">WG1736120</a>

<sup>2</sup>Tc

## Sample Narrative:

L1398905-01 WG1736120: Endpoint pH 4.5 Headspace

<sup>3</sup>Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	92.0		1.90	5.00	5	09/10/2021 01:02	<a href="#">WG1736923</a>
Sulfate	154		2.97	25.0	5	09/10/2021 01:02	<a href="#">WG1736923</a>

<sup>4</sup>Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	89.3		0.0793	1.00	1	09/08/2021 12:13	<a href="#">WG1735014</a>
Magnesium,Dissolved	60.3		0.0853	1.00	1	09/08/2021 12:13	<a href="#">WG1735014</a>
Potassium,Dissolved	12.0		0.261	2.00	1	09/08/2021 12:13	<a href="#">WG1735014</a>
Sodium,Dissolved	83.3		0.504	3.00	1	09/08/2021 12:13	<a href="#">WG1735014</a>

<sup>5</sup>Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00196	J	0.000180	0.00200	1	09/08/2021 15:46	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00183	J	0.000180	0.00200	1	09/08/2021 12:12	<a href="#">WG1736056</a>
Selenium	0.0120		0.000300	0.00200	1	09/08/2021 15:46	<a href="#">WG1736078</a>
Selenium,Dissolved	0.0114		0.000300	0.00200	1	09/08/2021 12:12	<a href="#">WG1736056</a>

<sup>6</sup>Qc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	984			20.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup> Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	295		8.45	20.0	1	09/07/2021 15:43	<a href="#">WG1736120</a>

<sup>2</sup> Tc

## Sample Narrative:

L1398905-02 WG1736120: Endpoint pH 4.5 Headspace

<sup>3</sup> Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	304		1.90	5.00	5	09/10/2021 01:33	<a href="#">WG1736923</a>
Sulfate	103		2.97	25.0	5	09/10/2021 01:33	<a href="#">WG1736923</a>

<sup>4</sup> Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	148		0.0793	1.00	1	09/08/2021 12:16	<a href="#">WG1735014</a>
Magnesium,Dissolved	47.0		0.0853	1.00	1	09/08/2021 12:16	<a href="#">WG1735014</a>
Potassium,Dissolved	4.75		0.261	2.00	1	09/08/2021 12:16	<a href="#">WG1735014</a>
Sodium,Dissolved	108		0.504	3.00	1	09/08/2021 12:16	<a href="#">WG1735014</a>

<sup>5</sup> Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00101	J	0.000180	0.00200	1	09/08/2021 15:49	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00103	J	0.000180	0.00200	1	09/08/2021 12:36	<a href="#">WG1736056</a>

<sup>6</sup> Qc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2490		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	445		8.45	20.0	1	09/07/2021 15:58	<a href="#">WG1736120</a>

<sup>2</sup>Tc

## Sample Narrative:

L1398905-03 WG1736120: Endpoint pH 4.5 Headspace

<sup>3</sup>Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	1180		19.0	50.0	50	09/10/2021 02:05	<a href="#">WG1736923</a>
Sulfate	201		2.97	25.0	5	09/10/2021 01:49	<a href="#">WG1736923</a>

<sup>4</sup>Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	186		0.0793	1.00	1	09/08/2021 12:19	<a href="#">WG1735014</a>
Magnesium,Dissolved	114		0.0853	1.00	1	09/08/2021 12:19	<a href="#">WG1735014</a>
Potassium,Dissolved	24.9		0.261	2.00	1	09/08/2021 12:19	<a href="#">WG1735014</a>
Sodium,Dissolved	533		0.504	3.00	1	09/08/2021 12:19	<a href="#">WG1735014</a>

<sup>5</sup>Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00514		0.000180	0.00200	1	09/08/2021 15:52	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00522		0.000180	0.00200	1	09/08/2021 12:40	<a href="#">WG1736056</a>
Selenium	0.0187		0.000300	0.00200	1	09/08/2021 15:52	<a href="#">WG1736078</a>
Selenium,Dissolved	0.0173		0.000300	0.00200	1	09/08/2021 12:40	<a href="#">WG1736056</a>

<sup>6</sup>Qc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	696		13.3	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	189		8.45	20.0	1	09/07/2021 16:01	<a href="#">WG1736120</a>

## Sample Narrative:

L1398905-04 WG1736120: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	205		1.90	5.00	5	09/10/2021 02:21	<a href="#">WG1736923</a>
Sulfate	118		2.97	25.0	5	09/10/2021 02:21	<a href="#">WG1736923</a>

<sup>7</sup>Gl<sup>8</sup>Al

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	117		0.0793	1.00	1	09/08/2021 12:22	<a href="#">WG1735014</a>
Magnesium,Dissolved	34.2		0.0853	1.00	1	09/08/2021 12:22	<a href="#">WG1735014</a>
Potassium,Dissolved	5.20		0.261	2.00	1	09/08/2021 12:22	<a href="#">WG1735014</a>
Sodium,Dissolved	59.3		0.504	3.00	1	09/08/2021 12:22	<a href="#">WG1735014</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00719		0.000180	0.00200	1	09/08/2021 15:56	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00406		0.000180	0.00200	1	09/08/2021 12:43	<a href="#">WG1736056</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	680		10.0	1	09/09/2021 18:27	<a href="#">WG1737786</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	186		8.45	20.0	1	09/07/2021 16:05	<a href="#">WG1736120</a>

<sup>2</sup>Tc

## Sample Narrative:

L1398905-05 WG1736120: Endpoint pH 4.5 Headspace

<sup>3</sup>Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	201		1.90	5.00	5	09/10/2021 02:52	<a href="#">WG1736923</a>
Sulfate	0.859	J	0.594	5.00	1	09/10/2021 02:36	<a href="#">WG1736923</a>

<sup>4</sup>Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	100		0.0793	1.00	1	09/08/2021 12:24	<a href="#">WG1735014</a>
Magnesium,Dissolved	22.3		0.0853	1.00	1	09/08/2021 12:24	<a href="#">WG1735014</a>
Potassium,Dissolved	8.21		0.261	2.00	1	09/08/2021 12:24	<a href="#">WG1735014</a>
Sodium,Dissolved	36.8		0.504	3.00	1	09/08/2021 12:24	<a href="#">WG1735014</a>

<sup>5</sup>Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00525		0.000180	0.00200	1	09/08/2021 16:09	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00532		0.000180	0.00200	1	09/08/2021 12:46	<a href="#">WG1736056</a>

<sup>6</sup>Qc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	381		10.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	156		8.45	20.0	1	09/07/2021 16:08	<a href="#">WG1736120</a>

## Sample Narrative:

L1398905-06 WG1736120: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	72.3		0.379	1.00	1	09/10/2021 03:40	<a href="#">WG1736923</a>
Sulfate	67.0		0.594	5.00	1	09/10/2021 03:40	<a href="#">WG1736923</a>

<sup>7</sup>Gl<sup>8</sup>Al

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	56.5		0.0793	1.00	1	09/08/2021 12:32	<a href="#">WG1735014</a>
Magnesium,Dissolved	23.6		0.0853	1.00	1	09/08/2021 12:32	<a href="#">WG1735014</a>
Potassium,Dissolved	9.56		0.261	2.00	1	09/08/2021 12:32	<a href="#">WG1735014</a>
Sodium,Dissolved	25.1		0.504	3.00	1	09/08/2021 12:32	<a href="#">WG1735014</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0354		0.000180	0.00200	1	09/08/2021 16:13	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.0348		0.000180	0.00200	1	09/08/2021 12:50	<a href="#">WG1736056</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1030		20.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup> Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	332		8.45	20.0	1	09/07/2021 17:40	<a href="#">WG1736220</a>

<sup>2</sup> Tc

## Sample Narrative:

L1398905-07 WG1736220: Endpoint pH 4.5 Headspace

<sup>3</sup> Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	323		1.90	5.00	5	09/10/2021 04:44	<a href="#">WG1736923</a>
Sulfate	87.0		0.594	5.00	1	09/10/2021 03:56	<a href="#">WG1736923</a>

<sup>4</sup> Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	93.6	V	0.0793	1.00	1	09/08/2021 11:33	<a href="#">WG1735014</a>
Magnesium,Dissolved	42.7		0.0853	1.00	1	09/08/2021 11:33	<a href="#">WG1735014</a>
Potassium,Dissolved	14.9		0.261	2.00	1	09/08/2021 11:33	<a href="#">WG1735014</a>
Sodium,Dissolved	214	V	0.504	3.00	1	09/08/2021 11:33	<a href="#">WG1735014</a>

<sup>5</sup> Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0407		0.000180	0.00200	1	09/08/2021 15:32	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.0398		0.000180	0.00200	1	09/08/2021 11:48	<a href="#">WG1736056</a>
Selenium	U		0.000300	0.00200	1	09/08/2021 15:32	<a href="#">WG1736078</a>
Selenium,Dissolved	U		0.000300	0.00200	1	09/08/2021 11:48	<a href="#">WG1736056</a>

<sup>6</sup> Qc<sup>7</sup> GI<sup>8</sup> Al<sup>9</sup> Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1650		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup> Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	434		8.45	20.0	1	09/07/2021 17:19	<a href="#">WG1736220</a>

<sup>2</sup> Tc

## Sample Narrative:

L1398905-08 WG1736220: Endpoint pH 4.5 Headspace

<sup>3</sup> Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	644		3.79	10.0	10	09/10/2021 05:00	<a href="#">WG1736923</a>
Sulfate	127		5.94	50.0	10	09/10/2021 05:00	<a href="#">WG1736923</a>

<sup>4</sup> Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	165		0.0793	1.00	1	09/08/2021 12:35	<a href="#">WG1735014</a>
Magnesium,Dissolved	54.1		0.0853	1.00	1	09/08/2021 12:35	<a href="#">WG1735014</a>
Potassium,Dissolved	23.0		0.261	2.00	1	09/08/2021 12:35	<a href="#">WG1735014</a>
Sodium,Dissolved	337		0.504	3.00	1	09/08/2021 12:35	<a href="#">WG1735014</a>

<sup>5</sup> Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0609		0.000180	0.00200	1	09/08/2021 16:16	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.0598		0.000180	0.00200	1	09/08/2021 12:53	<a href="#">WG1736056</a>
Selenium	U		0.000300	0.00200	1	09/08/2021 16:16	<a href="#">WG1736078</a>
Selenium,Dissolved	U		0.000300	0.00200	1	09/08/2021 12:53	<a href="#">WG1736056</a>

<sup>6</sup> Qc<sup>7</sup> GI<sup>8</sup> Al<sup>9</sup> Sc

MW-11-210901

Collected date/time: 09/01/21 08:17

## SAMPLE RESULTS - 09

L1398905

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1760		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	210		2.97	25.0	5	09/10/2021 05:16	<a href="#">WG1736923</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0951		0.000180	0.00200	1	09/08/2021 16:20	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.0802		0.000180	0.00200	1	09/08/2021 12:57	<a href="#">WG1736056</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1790		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	316		8.45	20.0	1	09/07/2021 17:43	<a href="#">WG1736220</a>

<sup>2</sup>Tc

## Sample Narrative:

L1398905-10 WG1736220: Endpoint pH 4.5 Headspace

<sup>3</sup>Ss

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	785		7.58	20.0	20	09/10/2021 05:47	<a href="#">WG1736923</a>
Sulfate	250		2.97	25.0	5	09/10/2021 05:32	<a href="#">WG1736923</a>

<sup>4</sup>Cn

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	185		0.0793	1.00	1	09/08/2021 12:38	<a href="#">WG1735014</a>
Magnesium,Dissolved	64.1		0.0853	1.00	1	09/08/2021 12:38	<a href="#">WG1735014</a>
Potassium,Dissolved	39.2		0.261	2.00	1	09/08/2021 12:38	<a href="#">WG1735014</a>
Sodium,Dissolved	352		0.504	3.00	1	09/08/2021 12:38	<a href="#">WG1735014</a>

<sup>5</sup>Sr

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.303		0.000180	0.00200	1	09/08/2021 16:23	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.293		0.000180	0.00200	1	09/08/2021 13:00	<a href="#">WG1736056</a>
Selenium	U		0.000300	0.00200	1	09/08/2021 16:23	<a href="#">WG1736078</a>
Selenium,Dissolved	U		0.000300	0.00200	1	09/08/2021 13:00	<a href="#">WG1736056</a>

<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

MW-12R-210901

Collected date/time: 09/01/21 16:45

## SAMPLE RESULTS - 11

L1398905

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1860		50.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	199		2.97	25.0	5	09/10/2021 06:03	<a href="#">WG1736923</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.534		0.000180	0.00200	1	09/08/2021 16:27	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.495		0.000180	0.00200	1	09/08/2021 13:04	<a href="#">WG1736056</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

MW-10-210902

Collected date/time: 09/02/21 07:50

## SAMPLE RESULTS - 12

L1398905

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2020		50.0	1	09/09/2021 18:27	<a href="#">WG1737786</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	360		5.94	50.0	10	09/10/2021 06:51	<a href="#">WG1736923</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	21.5		0.000900	0.0100	5	09/08/2021 16:52	<a href="#">WG1736078</a>
Arsenic,Dissolved	23.2		0.000900	0.0100	5	09/08/2021 13:22	<a href="#">WG1736056</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	984			20.0	1	09/07/2021 17:12	<a href="#">WG1735717</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	300		8.45	20.0	1	09/07/2021 17:50	<a href="#">WG1736220</a>

## Sample Narrative:

L1398905-13 WG1736220: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	304		1.90	5.00	5	09/10/2021 07:07	<a href="#">WG1736923</a>
Sulfate	103		2.97	25.0	5	09/10/2021 07:07	<a href="#">WG1736923</a>

<sup>7</sup> GI<sup>8</sup> Al

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	146		0.0793	1.00	1	09/08/2021 12:41	<a href="#">WG1735014</a>
Magnesium,Dissolved	47.4		0.0853	1.00	1	09/08/2021 12:41	<a href="#">WG1735014</a>
Potassium,Dissolved	4.80		0.261	2.00	1	09/08/2021 12:41	<a href="#">WG1735014</a>
Sodium,Dissolved	108		0.504	3.00	1	09/08/2021 12:41	<a href="#">WG1735014</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00216		0.000180	0.00200	1	09/08/2021 16:34	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00132	J	0.000180	0.00200	1	09/08/2021 13:25	<a href="#">WG1736056</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2410		50.0	1	09/07/2021 17:12	<a href="#">WG1735717</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Alkalinity	438		8.45	20.0	1	09/07/2021 17:53	<a href="#">WG1736220</a>

## Sample Narrative:

L1398905-14 WG1736220: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Chloride	1150		19.0	50.0	50	09/10/2021 07:39	<a href="#">WG1736923</a>
Sulfate	204		2.97	25.0	5	09/10/2021 07:23	<a href="#">WG1736923</a>

<sup>7</sup>Gl<sup>8</sup>Al

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Calcium,Dissolved	184		0.0793	1.00	1	09/08/2021 12:43	<a href="#">WG1735014</a>
Magnesium,Dissolved	115		0.0853	1.00	1	09/08/2021 12:43	<a href="#">WG1735014</a>
Potassium,Dissolved	24.9		0.261	2.00	1	09/08/2021 12:43	<a href="#">WG1735014</a>
Sodium,Dissolved	533		0.504	3.00	1	09/08/2021 12:43	<a href="#">WG1735014</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00551		0.000180	0.00200	1	09/08/2021 16:37	<a href="#">WG1736078</a>
Arsenic,Dissolved	0.00515		0.000180	0.00200	1	09/08/2021 13:29	<a href="#">WG1736056</a>
Selenium	0.0168		0.000300	0.00200	1	09/08/2021 16:37	<a href="#">WG1736078</a>
Selenium,Dissolved	0.0185		0.000300	0.00200	1	09/08/2021 13:29	<a href="#">WG1736056</a>

SW-5-21-0901

Collected date/time: 09/01/21 10:45

## SAMPLE RESULTS - 15

L1398905

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1410		25.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	19.2		3.85	1	09/07/2021 17:19	<a href="#">WG1736404</a>

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	346		2.97	25.0	5	09/10/2021 07:55	<a href="#">WG1736923</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic,Dissolved	0.0215		0.000180	0.00200	1	09/08/2021 13:32	<a href="#">WG1736056</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1400		25.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc

## Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	21.7		3.85	1	09/07/2021 17:19	<a href="#">WG1736404</a>

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	347		2.97	25.0	5	09/10/2021 08:11	<a href="#">WG1736923</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic,Dissolved	0.0189		0.000180	0.00200	1	09/08/2021 13:36	<a href="#">WG1736056</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1380		25.0	1	09/07/2021 21:53	<a href="#">WG1736469</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc

## Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	23.4		3.58	1	09/07/2021 17:19	<a href="#">WG1736404</a>

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	342		2.97	25.0	5	09/10/2021 08:27	<a href="#">WG1736923</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic,Dissolved	0.0163		0.000180	0.00200	1	09/08/2021 13:39	<a href="#">WG1736056</a>

WG1735714

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,07,08,09,10](#)

## Method Blank (MB)

(MB) R3701758-1 09/06/21 20:45

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3701758-3 09/06/21 20:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	841	1		0.955		5

## L1398905-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-07 09/06/21 20:45 • (DUP) R3701758-4 09/06/21 20:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1030	1040	1	0.970		5

## Laboratory Control Sample (LCS)

(LCS) R3701758-2 09/06/21 20:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8450	96.0	77.4-123	

WG1735717

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

[L1398905-13,14](#)

## Method Blank (MB)

(MB) R3702574-1 09/07/21 17:12

Analyst	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398717-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398717-02 09/07/21 17:12 • (DUP) R3702574-3 09/07/21 17:12

Analyst	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	908	914	1	0.659		5

## L1398905-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-13 09/07/21 17:12 • (DUP) R3702574-4 09/07/21 17:12

Analyst	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	984	1020	1	3.20		5

## Laboratory Control Sample (LCS)

(LCS) R3702574-2 09/07/21 17:12

Analyst	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8460	96.1	77.4-123	

WG1736459

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

L1398905-06,11,15,16

## Method Blank (MB)

(MB) R3702494-1 09/07/21 20:16

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398884-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398884-01 09/07/21 20:16 • (DUP) R3702494-3 09/07/21 20:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1770	1790	1	0.703		5

## L1398905-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-15 09/07/21 20:16 • (DUP) R3702494-4 09/07/21 20:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1410	1430	1	1.06		5

## Laboratory Control Sample (LCS)

(LCS) R3702494-2 09/07/21 20:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8520	96.8	77.4-123	

WG1736469

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

[L1398905-17](#)

## Method Blank (MB)

(MB) R3702490-1 09/07/21 21:53

Analyte	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398905-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-17 09/07/21 21:53 • (DUP) R3702490-3 09/07/21 21:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Dissolved Solids	1380	1410	1	1.97		5

## L1399120-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1399120-06 09/07/21 21:53 • (DUP) R3702490-4 09/07/21 21:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Dissolved Solids	889	944	1	5.96	<u>J3</u>	5

<sup>7</sup>Gl<sup>8</sup>Al

## Laboratory Control Sample (LCS)

(LCS) R3702490-2 09/07/21 21:53

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
	mg/l	mg/l	%	%	
Dissolved Solids	8800	8460	96.1	77.4-123	

<sup>9</sup>Sc

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Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

L1398905-05,12

## Method Blank (MB)

(MB) R3703992-1 09/09/2118:27

Analyte	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398247-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398247-02 09/09/2118:27 • (DUP) R3703992-3 09/09/2118:27

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Dissolved Solids	960	966	1	0.623		5

## L1398809-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398809-01 09/09/2118:27 • (DUP) R3703992-4 09/09/2118:27

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Dissolved Solids	816	836	1	2.42		5

<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3703992-2 09/09/2118:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
	mg/l	mg/l	%	%	
Dissolved Solids	8800	8510	96.7	77.4-123	

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Gravimetric Analysis by Method 2540 D-2011

## QUALITY CONTROL SUMMARY

[L1398905-15,16,17](#)

## Method Blank (MB)

(MB) R3701854-1 09/07/21 17:19

Analyte	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Suspended Solids	U		2.50	2.50

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398260-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398260-01 09/07/21 17:19 • (DUP) R3701854-3 09/07/21 17:19

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Suspended Solids	157	163	1	4.16		5

## L1398840-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398840-01 09/07/21 17:19 • (DUP) R3701854-4 09/07/21 17:19

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Suspended Solids	96.3	104	1	7.50	P1	5

<sup>7</sup>Gl<sup>8</sup>Al

## Laboratory Control Sample (LCS)

(LCS) R3701854-2 09/07/21 17:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
	mg/l	mg/l	%	%	
Suspended Solids	773	768	99.4	85.7-114	

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## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06](#)

## Method Blank (MB)

(MB) R3701264-2 09/07/2114:32

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0

## Sample Narrative:

BLANK: Endpoint pH 4.5

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398825-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1398825-06 09/07/2114:40 • (DUP) R3701264-3 09/07/2114:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Alkalinity	85.7	85.0	1	0.851		20

## Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

## L1398905-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-02 09/07/2115:43 • (DUP) R3701264-4 09/07/2115:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Alkalinity	295	295	1	0.0377		20

## Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

## Laboratory Control Sample (LCS)

(LCS) R3701264-1 09/07/2114:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	100	100	90.0-110	

## Sample Narrative:

LCS: Endpoint pH 4.5

## QUALITY CONTROL SUMMARY

L1398905-07,08,10,13,14

## Method Blank (MB)

(MB) R3701345-2 09/07/21 16:33

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0

## Sample Narrative:

BLANK: Endpoint pH 4.5

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398905-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-08 09/07/21 17:19 • (DUP) R3701345-3 09/07/21 17:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Alkalinity	434	437	1	0.650		20

## Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

## L1398905-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-10 09/07/21 17:43 • (DUP) R3701345-4 09/07/21 17:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Alkalinity	316	308	1	2.37		20

## Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

## Laboratory Control Sample (LCS)

(LCS) R3701345-1 09/07/21 16:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	100	100	90.0-110	

## Sample Narrative:

LCS: Endpoint pH 4.5

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Wet Chemistry by Method 9056A

## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17](#)

## Method Blank (MB)

(MB) R3703098-1 09/09/21 22:13

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398905-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-01 09/10/21 01:02 • (DUP) R3703098-3 09/10/21 01:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Chloride	92.0	92.0	5	0.00272		15
Sulfate	154	154	5	0.328		15

## L1398905-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-17 09/10/21 08:27 • (DUP) R3703098-6 09/10/21 08:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Chloride	434	436	5	0.315		15
Sulfate	342	342	5	0.226		15

## Laboratory Control Sample (LCS)

(LCS) R3703098-2 09/09/21 22:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Chloride	40.0	39.3	98.3	80.0-120	
Sulfate	40.0	39.8	99.4	80.0-120	

## L1398905-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398905-07 09/10/21 03:56 • (MS) R3703098-4 09/10/21 04:12 • (MSD) R3703098-5 09/10/21 04:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits
Chloride	50.0	315	348	348	66.7	66.4	1	80.0-120	<u>E</u> <u>V</u>	<u>E</u> <u>V</u>	0.0476	15
Sulfate	50.0	87.0	130	129	85.0	84.9	1	80.0-120	<u>E</u>	<u>E</u>	0.0488	15

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Wet Chemistry by Method 9056A

## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17](#)

## L1399428-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1399428-01 09/10/21 10:18 • (MS) R3703098-7 09/10/21 10:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution 1	Rec. Limits 80.0-120	<u>MS Qualifier</u>
Chloride	50.0	71.6	120	97.2	1	80.0-120	E
Sulfate	50.0	18.2	70.4	104	1	80.0-120	

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

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## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06,07,08,10,13,14](#)

## Method Blank (MB)

(MB) R3701948-1 09/08/21 11:28

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0793	1.00
Magnesium,Dissolved	U		0.0853	1.00
Potassium,Dissolved	U		0.261	2.00
Sodium,Dissolved	U		0.504	3.00

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3701948-2 09/08/21 11:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Calcium,Dissolved	10.0	9.46	94.6	80.0-120	
Magnesium,Dissolved	10.0	9.55	95.5	80.0-120	
Potassium,Dissolved	10.0	9.13	91.3	80.0-120	
Sodium,Dissolved	10.0	9.64	96.4	80.0-120	

## L1398905-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398905-07 09/08/21 11:33 • (MS) R3701948-4 09/08/21 11:38 • (MSD) R3701948-5 09/08/21 11:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits
Calcium,Dissolved	10.0	93.6	101	100	72.9	66.1	1	75.0-125	V	V	0.681	20
Magnesium,Dissolved	10.0	42.7	51.4	51.1	86.9	83.8	1	75.0-125			0.609	20
Potassium,Dissolved	10.0	14.9	23.9	23.8	90.6	89.4	1	75.0-125			0.513	20
Sodium,Dissolved	10.0	214	220	218	53.1	38.7	1	75.0-125	V	V	0.656	20

WG1736056

Metals (ICPMS) by Method 6020

## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17](#)

## Method Blank (MB)

(MB) R3701653-1 09/08/21 11:41

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Arsenic,Dissolved	U		0.000180	0.00200
Selenium,Dissolved	U		0.000300	0.00200

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3701653-2 09/08/21 11:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic,Dissolved	0.0500	0.0482	96.4	80.0-120	
Selenium,Dissolved	0.0500	0.0516	103	80.0-120	

## L1398905-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398905-07 09/08/21 11:48 • (MS) R3701653-3 09/08/21 11:55 • (MSD) R3701653-4 09/08/21 11:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Arsenic,Dissolved	0.0500	0.0398	0.0850	0.0887	90.5	97.8	1	75.0-125			4.20	20
Selenium,Dissolved	0.0500	U	0.0498	0.0524	99.5	105	1	75.0-125			5.14	20

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Metals (ICPMS) by Method 6020

## QUALITY CONTROL SUMMARY

[L1398905-01,02,03,04,05,06,07,08,09,10,11,12,13,14](#)

## Method Blank (MB)

(MB) R3701879-6 09/08/21 17:43

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.000180	0.00200
Selenium	0.000606	J	0.000300	0.00200

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3701879-2 09/08/21 15:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic	0.0500	0.0487	97.3	80.0-120	
Selenium	0.0500	0.0515	103	80.0-120	

## L1398905-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398905-07 09/08/21 15:32 • (MS) R3701879-4 09/08/21 15:39 • (MSD) R3701879-5 09/08/21 15:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Arsenic	0.0500	0.0407	0.0905	0.0879	99.7	94.4	1	75.0-125			2.96	20
Selenium	0.0500	U	0.0545	0.0532	109	106	1	75.0-125			2.49	20

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# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

**Results Disclaimer -** Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.	<sup>1</sup> Cp
RDL	Reported Detection Limit.	<sup>2</sup> Tc
Rec.	Recovery.	<sup>3</sup> Ss
RPD	Relative Percent Difference.	<sup>4</sup> Cn
SDG	Sample Delivery Group.	<sup>5</sup> Sr
U	Not detected at the Reporting Limit (or MDL where applicable).	<sup>6</sup> Qc
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.	<sup>7</sup> GI
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.	<sup>8</sup> AI
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.	<sup>9</sup> SC
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.	
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.	
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.	
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.	
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.	
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.	
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.	
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.	
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.	

### Qualifier

### Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

# ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey—NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio—VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Company Name/Address: <b>Ramboll US Consulting, Inc. - Denver</b> 2225 1999 Broadway Suite 1905 Denver, CO 80202				Billing Information: <b>Accounts Payable</b> PO Box 4229 Indianapolis, IN 46242		Pres Chk	Analysis / Container / Preservative				Chain of Custody Page ____ of ____				
				Email To: jkrech@ramboll.com;jmoyers@ramboll.com SJREYNOLDS@Ramboll.com							Pace Analytical® 12065 Lebanon Rd Mount Juliet, TN 37122 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <a href="https://info.pacelabs.com/hubs/pas-standard-terms.pdf">https://info.pacelabs.com/hubs/pas-standard-terms.pdf</a>				
Report to: <b>Joel Krech</b>						Please Circle: PT <input checked="" type="checkbox"/> CT <input type="checkbox"/> ET									
Project Description: 5121 Cottonwood St.		City/State Collected:	Murphy, UT	Lab Project # <b>ENVIRONCO-QC3</b>											
Phone: 303-382-5474		Client Project # <b>1690011505-001</b> 1690016007-001													
Collected by (print): <i>Joel Krech</i>		Site/Facility ID # <b>Former Murphy Smelter</b>		P.O. #											
Collected by (signature): <i>Joel Krech</i>		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote # <b>T168920</b>		Date Results Needed <b>10-5 day</b>	No. of Cntrs								
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>															
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time		ALK, CHLORIDE, SULFATE 1L-HDPE NoPres	ASDG 250mlHDPE-NoPres	Diss Metals 250mlHDPE NoPres Per T168920	Sulfate 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres	TSS 1L-HDPE NoPres	Remarks	Sample # (lab only)	
SPM-2B-21 0831	Grab	GW	N/A	8/31/21	0830	4	X	X X	X X	X	X			-01	
IPM-1-21 0831		GW		8/31/21	1030	4	X	X X	X X	X	X			-02	
SPM-1-21 0831		GW		8/31/21	0943	4	X	X X	X X	X	X			-03	
IPM-2-21 0831		GW		8/31/21	1240	4	X	X X	X X	X	X			-04	
IPM-3-21 0902		GW		9/2/21	0835	4	X	X X	X X	X	X			-05	
IPM-5-21 0901		GW		9/1/21	1423	4	X	X X	X X	X	X			-06	
SPM-3B-21 0831		GW		8/31/21	1102	4	X	X X	X X	X	X			-07	
SPM-4B-21 0831		GW		8/31/21	1305	4	X	X X	X X	X	X			-08	
MW-11-21 0901		GW		9/1/21	0817	4		X X	X X	X	X			-09	
SPM-5-21 0831		GW		8/31/21	1615	4	X	X X	X X	X	X			-10	
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other	Remarks: Diss Metals Field Filtered. Level III data package SPM-3B-210831 is using -3x volume (2 bottles)												Sample Receipt Checklist		
													pH _____	Temp _____	COC Seal Present/Intact: <input type="checkbox"/> NP <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
													Flow _____	Other _____	COC Signed/Accurate: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															Bottles arrive intact: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															Correct bottles used: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															Sufficient volume sent: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															If Applicable
															VOA Zero Headspace: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															Preservation Correct/Checked: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
															RAD Screen <0.5 mR/hr: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Relinquished by: (Signature)		Date: 9/2/21	Time: 1045	Received by: (Signature)				Trip Blank Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> HCl / MeOH <input type="checkbox"/> TBR				If preservation required by Login: Date/Time			
Relinquished by: (Signature)		Date: 9/2/21	Time: 17:00	Received by: (Signature)				Temp: A2 Rec 0.4 + 1 = 0.5 Bottles Received: 76				as pH Ad 9/3 14:00			
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature)				Date: 9/3/21 Time: 8:00				Hold:			

Company Name/Address:

**Ramboll US Consulting, Inc. - Denver**1999 Broadway Suite 1905  
Denver, CO 80202

Billing Information:

Accounts Payable  
PO Box 4229  
Indianapolis, IN 46242Pres  
ChkEmail To:  
jkrech@ramboll.com;jmvers@ramboll.com  
SOREYNOLDS@Ramboll.comReport to:  
**Joel Krech**Project Description:  
5121 Cottonwood St.City/State  
Collected:

Murray, UT

Please Circle:  
PT MT CT ET

Phone: 303-382-5474

Client Project #  
**1690011-505-001**  
1690016007-001Lab Project #  
**ENVIRONCO-QC3**Collected by (print):  
*Joel Krech*Site/Facility ID #  
*Former Murray Smelter*P.O. #  
*1690016007-001*

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately  
Packed on Ice N Y XSame Day Five Day  
Next Day 5 Day (Rad Only)  
Two Day 10 Day (Rad Only)  
Three Day

Date Results Needed

*10-Day*No. of  
Cntrs

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

MW-12R-21 0901

Grab

GW

MT

9/1/21

1645

4

X

X

X

X

-11

MW-10-21 0902

Grab

GW

WT

9/2/21

0750

4

X

X

X

X

-12

IRM-15-210831

Grab

GW

NA

8/31/21

1015

4

X

X

X

X

-13

IRM-15-210831

Grab

GW

NA

8/31/21

0930

4

X

X

X

X

-14

MS-

GW

4

X

X

X

X

-15

MSD-

GW

4

X

X

X

X

-16

SW-5-21 0901

Grab

GW

N/A

9/1/21

1045

4

X

X

X

X

-17

SW-15-21 0901

Grab

GW

N/A

9/1/21

1215

4

X

X

X

X

-18

SW-13-21 0901

Grab

GW

N/A

9/1/21

0915

4

X

X

X

X

-19

\* Matrix:

SS - Soil AIR - Air

F - Filter

GW - Groundwater

B - Bioassay

WW - WasteWater

DW - Drinking Water

OT - Other

Remarks: Diss. Metals Field Filtered. Last # Data Package.  
IRM-15-210831 Diss. metals = As, Metals = As  
SPM-15-210831 Diss. metals = As, Se, Ca, Mg, K, Na, Metals = As, Se

pH \_\_\_\_\_ Temp \_\_\_\_\_

Flow \_\_\_\_\_ Other \_\_\_\_\_

Relinquished by: (Signature)

Samples returned via:

UPS FedEx Courier

SWT

Tracking #

Trip Blank Received: Yes / No  
HCl / MeOH  
TBRTemp A2 PmC  
0.4+1=0.5 Bottles Received:  
76

Relinquished by: (Signature)

Date: 9/2/21 Time: 1045

Received by: (Signature)

Relinquished By: (Signature)

Date: 9/2/21 Time: 17:00

Received for lab by: (Signature)

R. Holeen

Date: 9/3/21 Time: 8:00

Sample Receipt Checklist	
COC Seal Present/Intact:	NP Y N
COC Signed/Accurate:	Y N
Bottles arrive intact:	Y N
Correct bottles used:	Y N
Sufficient volume sent:	Y N
If Applicable	
VOA Zero Headspace:	Y N
Preservation Correct/Checked:	Y N
RAD Screen <0.5 mR/hr:	Y N

If preservation required by Login: Date/Time
Condition: NCF / ok

Chain of Custody Page \_\_\_\_ of \_\_\_\_

Pace Analytical®

12065 Lebanon Rd Mount Juliet, TN 37122  
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # *U398905*

Table #

Acctnum: ENVIRONCO

Template: T168920

Prelogin: P868020

PM: 296 - Darren Reeder

PB: *CB 8/19/21*

Shipped Via: FedEX Ground

Remarks Sample # (lab only)



# ANALYTICAL REPORT

September 17, 2021

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

## Ramboll US Consulting, Inc. - Denver

Sample Delivery Group: L1398899  
Samples Received: 09/03/2021  
Project Number: 1690016007-001  
Description: Former Murry Smelter  
Site: FORMER MURRAY SMELTER  
Report To: Joel Krech  
1999 Broadway Suite 2225  
Denver, CO 80202

Entire Report Reviewed By:

Darren Reeder  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

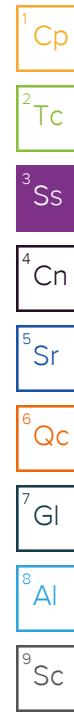
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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<b>Cn: Case Narrative</b>	<b>5</b>	 <sup>4</sup> Cn
<b>Sr: Sample Results</b>	<b>6</b>	 <sup>5</sup> Sr
MW-2U-210831 L1398899-01	6	 <sup>6</sup> Qc
MW-3U-210831 L1398899-02	7	 <sup>7</sup> Gl
MW-4D-210831 L1398899-03	8	 <sup>8</sup> Al
MW-4UR-210831 L1398899-04	9	 <sup>9</sup> Sc
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<b>Sc: Sample Chain of Custody</b>	<b>23</b>	

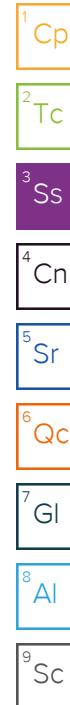
# SAMPLE SUMMARY

			Collected by Joel Kretch	Collected date/time 08/31/21 14:55	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	10	09/09/21 23:37	09/09/21 23:37	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:06	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 19:56	JPD	Mt. Juliet, TN
<b>MW-3U-210831 L1398899-02 GW</b>			Collected by Joel Kretch	Collected date/time 08/31/21 09:05	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/09/21 23:49	09/09/21 23:49	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:23	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 19:59	JPD	Mt. Juliet, TN
<b>MW-4D-210831 L1398899-03 GW</b>			Collected by Joel Kretch	Collected date/time 08/31/21 13:35	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 00:00	09/10/21 00:00	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:26	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:03	JPD	Mt. Juliet, TN
<b>MW-4UR-210831 L1398899-04 GW</b>			Collected by Joel Kretch	Collected date/time 08/31/21 16:20	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 00:12	09/10/21 00:12	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:30	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:06	JPD	Mt. Juliet, TN
<b>MW-3D-210831 L1398899-05 GW</b>			Collected by Joel Kretch	Collected date/time 08/31/21 16:40	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 00:46	09/10/21 00:46	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:33	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:16	JPD	Mt. Juliet, TN
<b>MW-5D-210831 L1398899-06 GW</b>			Collected by Joel Kretch	Collected date/time 09/01/21 15:35	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 00:58	09/10/21 00:58	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:36	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:19	JPD	Mt. Juliet, TN



# SAMPLE SUMMARY

			Collected by Joel Krech	Collected date/time 08/31/21 18:25	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 01:09	09/10/21 01:09	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:40	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:22	JPD	Mt. Juliet, TN
			Collected by Joel Krech	Collected date/time 09/01/21 08:10	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	10	09/10/21 01:21	09/10/21 01:21	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:43	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:25	JPD	Mt. Juliet, TN
			Collected by Joel Krech	Collected date/time 09/01/21 14:25	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1736459	1	09/07/21 18:22	09/07/21 20:16	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	10	09/10/21 02:07	09/10/21 02:07	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 11:42	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 19:43	JPD	Mt. Juliet, TN
			Collected by Joel Krech	Collected date/time 08/31/21 16:10	Received date/time 09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1735714	1	09/06/21 19:41	09/06/21 20:45	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1736921	5	09/10/21 02:18	09/10/21 02:18	MSP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736057	1	09/08/21 23:59	09/09/21 12:46	LAT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1736082	1	09/08/21 10:44	09/08/21 20:28	JPD	Mt. Juliet, TN



# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Darren Reeder  
Project Manager

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> GI
- <sup>8</sup> AI
- <sup>9</sup> Sc

MW-2U-210831

Collected date/time: 08/31/21 14:55

## SAMPLE RESULTS - 01

L1398899

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2490		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	655		5.94	50.0	10	09/09/2021 23:37	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.00566		0.000180	0.00200	1	09/08/2021 19:56	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.00201		0.000180	0.00200	1	09/09/2021 12:06	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2310		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	308		2.97	25.0	5	09/09/2021 23:49	<a href="#">WG1736921</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0189		0.000180	0.00200	1	09/08/2021 19:59	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.0164		0.000180	0.00200	1	09/09/2021 12:23	<a href="#">WG1736057</a>

MW-4D-210831

Collected date/time: 08/31/21 13:35

## SAMPLE RESULTS - 03

L1398899

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2930		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	367		2.97	25.0	5	09/10/2021 00:00	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0247		0.000180	0.00200	1	09/08/2021 20:03	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.0223		0.000180	0.00200	1	09/09/2021 12:26	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

MW-4UR-210831

Collected date/time: 08/31/21 16:20

## SAMPLE RESULTS - 04

L1398899

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	3570		100	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	387		2.97	25.0	5	09/10/2021 00:12	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0439		0.000180	0.00200	1	09/08/2021 20:06	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.0422		0.000180	0.00200	1	09/09/2021 12:30	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	1780		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	179		2.97	25.0	5	09/10/2021 00:46	<a href="#">WG1736921</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.322		0.000180	0.00200	1	09/08/2021 20:16	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.317		0.000180	0.00200	1	09/09/2021 12:33	<a href="#">WG1736057</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2580		50.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	431		2.97	25.0	5	09/10/2021 00:58	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	1.08		0.000180	0.00200	1	09/08/2021 20:19	<a href="#">WG1736082</a>
Arsenic,Dissolved	1.08		0.000180	0.00200	1	09/09/2021 12:36	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

MW-2D-210831

Collected date/time: 08/31/21 18:25

## SAMPLE RESULTS - 07

L1398899

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2310		50.0	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	334		2.97	25.0	5	09/10/2021 01:09	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	1.47		0.000180	0.00200	1	09/08/2021 20:22	<a href="#">WG1736082</a>
Arsenic,Dissolved	1.54		0.000180	0.00200	1	09/09/2021 12:40	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2230		50.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	607		5.94	50.0	10	09/10/2021 01:21	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	2.23		0.000180	0.00200	1	09/08/2021 20:25	<a href="#">WG1736082</a>
Arsenic,Dissolved	2.21		0.000180	0.00200	1	09/09/2021 12:43	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	2210		50.0	1	09/07/2021 20:16	<a href="#">WG1736459</a>

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	773		5.94	50.0	10	09/10/2021 02:07	<a href="#">WG1736921</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	6.14		0.000180	0.00200	1	09/08/2021 19:43	<a href="#">WG1736082</a>
Arsenic,Dissolved	6.13	<u>V</u>	0.000180	0.00200	1	09/09/2021 11:42	<a href="#">WG1736057</a>

MW-45UR-210831

Collected date/time: 08/31/21 16:10

## SAMPLE RESULTS - 10

L1398899

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Dissolved Solids	3830		100	1	09/06/2021 20:45	<a href="#">WG1735714</a>

<sup>1</sup>Cp

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Sulfate	386		2.97	25.0	5	09/10/2021 02:18	<a href="#">WG1736921</a>

<sup>2</sup>Tc

## Metals (ICPMS) by Method 6020

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Arsenic	0.0441		0.000180	0.00200	1	09/08/2021 20:28	<a href="#">WG1736082</a>
Arsenic,Dissolved	0.0457		0.000180	0.00200	1	09/09/2021 12:46	<a href="#">WG1736057</a>

<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

WG1735714

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

[L1398899-01,02,03,04,05,07,10](#)

## Method Blank (MB)

(MB) R3701758-1 09/06/21 20:45

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398556-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398556-01 09/06/21 20:45 • (DUP) R3701758-3 09/06/21 20:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	833	841	1	0.955		5

## L1398905-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-07 09/06/21 20:45 • (DUP) R3701758-4 09/06/21 20:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1030	1040	1	0.970		5

## Laboratory Control Sample (LCS)

(LCS) R3701758-2 09/06/21 20:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8450	96.0	77.4-123	

WG1736459

Gravimetric Analysis by Method 2540 C-2011

## QUALITY CONTROL SUMMARY

L1398899-06,08,09

## Method Blank (MB)

(MB) R3702494-1 09/07/21 20:16

Analyst	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398884-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398884-01 09/07/21 20:16 • (DUP) R3702494-3 09/07/21 20:16

Analyst	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1770	1790	1	0.703		5

## L1398905-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1398905-15 09/07/21 20:16 • (DUP) R3702494-4 09/07/21 20:16

Analyst	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Dissolved Solids	1410	1430	1	1.06		5

## Laboratory Control Sample (LCS)

(LCS) R3702494-2 09/07/21 20:16

Analyst	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Dissolved Solids	8800	8520	96.8	77.4-123	

WG1736921

Wet Chemistry by Method 9056A

## QUALITY CONTROL SUMMARY

[L1398899-01,02,03,04,05,06,07,08,09,10](#)

## Method Blank (MB)

(MB) R3703109-1 09/09/21 22:29

Analyte	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398826-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398826-01 09/09/21 22:52 • (DUP) R3703109-3 09/09/21 23:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	21.2	21.3	1	0.143		15

## L1399425-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399425-01 09/10/21 05:22 • (DUP) R3703109-7 09/10/21 05:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
	mg/l	mg/l		%		%
Sulfate	36.4	36.4	1	0.113		15

<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3703109-2 09/09/21 22:40

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
	mg/l	mg/l	%	%	
Sulfate	40.0	40.7	102	80.0-120	

## L1398827-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1398827-01 09/09/21 23:15 • (MS) R3703109-4 09/09/21 23:26

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
	mg/l	mg/l	mg/l	%		%	
Sulfate	50.0	20.6	69.8	98.4	1	80.0-120	

<sup>1</sup>Cp

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## QUALITY CONTROL SUMMARY

[L1398899-01,02,03,04,05,06,07,08,09,10](#)

## Method Blank (MB)

(MB) R3702236-1 09/09/21 11:36

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Arsenic,Dissolved	0.000185	J	0.000180	0.00200

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3702236-2 09/09/21 11:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic,Dissolved	0.0500	0.0445	88.9	80.0-120	

## L1398899-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398899-09 09/09/21 11:42 • (MS) R3702236-4 09/09/21 11:49 • (MSD) R3702236-5 09/09/21 11:52

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Arsenic,Dissolved	0.0500	6.13	6.22	6.22	192	180	1	75.0-125	V	V	0.0933	20

## L1399322-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399322-01 09/09/21 11:56 • (MS) R3702236-6 09/09/21 11:59 • (MSD) R3702236-7 09/09/21 12:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Arsenic,Dissolved	0.0500	0.0128	0.0591	0.0596	92.7	93.5	1	75.0-125			0.740	20

WG1736082

Metals (ICPMS) by Method 6020

## QUALITY CONTROL SUMMARY

[L1398899-01,02,03,04,05,06,07,08,09,10](#)

## Method Blank (MB)

(MB) R3701923-1 09/08/21 19:36

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.000180	0.00200

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3701923-2 09/08/21 19:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic	0.0500	0.0472	94.5	80.0-120	

## L1398899-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398899-09 09/08/21 19:43 • (MS) R3701923-4 09/08/21 19:49 • (MSD) R3701923-5 09/08/21 19:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Arsenic	0.0500	6.14	6.16	6.14	42.1	0.000	1	75.0-125	V	V	0.422	20

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# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

**Results Disclaimer -** Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.	<sup>1</sup> Cp
RDL	Reported Detection Limit.	<sup>2</sup> Tc
Rec.	Recovery.	<sup>3</sup> Ss
RPD	Relative Percent Difference.	<sup>4</sup> Cn
SDG	Sample Delivery Group.	<sup>5</sup> Sr
U	Not detected at the Reporting Limit (or MDL where applicable).	<sup>6</sup> Qc
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.	<sup>7</sup> GI
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.	<sup>8</sup> AI
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.	<sup>9</sup> Sc
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.	
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.	
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.	
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.	
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.	
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.	
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.	
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.	
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.	

### Qualifier      Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

# ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey—NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio—VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Company Name/Address:

**Ramboll US Consulting, Inc. - Denver**2225  
1999 Broadway Suite 1905  
Denver, CO 80202Report to:  
**Joel Kreh**Project Description:  
Former Murry SmelterPhone: **303-382-5474**  
5464Collected by (print):  
**Joel Kreh**Collected by (signature):  
*[Signature]*Immediately  
Packed on Ice N  Y 

Sample ID

MW-2U-210831

MW-3U-210831

MW-4D-210831

MW-4UR-210831

MW-3D-210831

MW-5D-210901

MW-2D-210831

MW-1D-210901

MW-1U-210901

MW-45UR-210831

\* Matrix:  
SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - WasteWater  
DW - Drinking Water  
OT - Other \_\_\_\_\_Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*

		Billing Information:		Pres Chk	Analysis / Container / Preservative						Chain of Custody	Page ____ of ____
		Accounts Payable PO Box 4229 Indianapolis, IN 46242										

Report to:  
**Joel Kreh**Project Description:  
Former Murry SmelterPhone: **303-382-5474**  
5464Collected by (print):  
**Joel Kreh**Collected by (signature):  
*[Signature]*Immediately  
Packed on Ice N  Y 

Sample ID

MW-2U-210831

MW-3U-210831

MW-4D-210831

MW-4UR-210831

MW-3D-210831

MW-5D-210901

MW-2D-210831

MW-1D-210901

MW-1U-210901

MW-45UR-210831

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OT - Other \_\_\_\_\_Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*

		Email To: jkrech@ramboll.com;jmyers@ramboll.com SJREYNOLDS@RAMBOLL.COM		Please Circle: PT MT CT ET							SDG # <b>U398099</b>	Chain of Custody	Page ____ of ____

Collected by (print):  
**Joel Kreh**Collected by (signature):  
*[Signature]*Immediately  
Packed on Ice N  Y 

Sample ID

MW-2U-210831

MW-3U-210831

MW-4D-210831

MW-4UR-210831

MW-3D-210831

MW-5D-210901

MW-2D-210831

MW-1D-210901

MW-1U-210901

MW-45UR-210831

\* Matrix:  
SS - Soil AIR - Air F - Filter  
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WW - WasteWater  
DW - Drinking Water  
OT - Other \_\_\_\_\_Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*Relinquished by: (Signature)  
*[Signature]*

		Client Project # <b>1690016007-001</b>		Lab Project # <b>ENVIRONCO-QC4</b>		Date Results Needed <b>10 Day</b>	No. of Cntrs	Diss Metals 250mlHDPE-add HNO3 (Pt As)	Metals 250mlHDPE-HNO3 (tot As)	SULFATE 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres				Acctnum: <b>ENVIRONCO</b>
		Site/Facility ID # <b>Former Murry Smelter</b>		P.O. #											Template: <b>T168919</b>

		Rush? (Lab MUST Be Notified)		Quote #										Prelogin: <b>P868023</b>
		Same Day <input type="checkbox"/> Five Day <input type="checkbox"/>											PM: <b>296 - Darren Reeder</b>	
		Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/>											PB: <b>CJ 8/19/21</b>	
		Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/>											Shipped Via: <b>FedEX Ground</b>	
		Three Day <input type="checkbox"/>											Remarks <b>Sample # (lab only)</b>	

MW-2U-210831	Grab	GW	N/A	8/31/21	1455	4	X	X	X	X					-01
MW-3U-210831		GW		8/31/21	0905	4	X	X	X	X					-02
MW-4D-210831		GW		8/31/21	1335	4	X	X	X	X					-03
MW-4UR-210831		GW		8/31/21	1620	4	X	X	X	X					-04
MW-3D-210831		GW		8/31/21	1640	4	X	X	X	X					-05
MW-5D-210901		GW		9/1/21	1535	4	X	X	X	X					-06
MW-2D-210831		GW		8/31/21	1825	4	X	X	X	X					-07
MW-1D-210901		GW		9/1/21	0810	4	X	X	X	X					-08
MW-1U-210901		GW		9/1/21	1425	4	X	X	X	X					-09
MW-45UR-210831		GW	▼	8/31/21	1610	4	X	X	X	X					-10

Remarks: Dissolved Metals field filtered. Level <b># Data Release</b>		pH _____	Temp _____	Flow _____	Other _____	Sample Receipt Checklist
MW-45UR-210831 Diss Metals = As Tot Metals = As						COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
MW-1U-210901 is 1/5/100-3x volume collected						COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Samples returned via:		UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Tracking #			Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						If Applicable
						VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						RAD Screen <0.5 mR/hr: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Date: <b>9/2/21</b>	Time: <b>1045</b>	Received by: (Signature)	Trip Blank Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	HCl / MeOH <input type="checkbox"/>	TBR <input type="checkbox"/>	If preservation required by Login: Date/Time
Date: <b>9/2/21</b>	Time: <b>17:00</b>	Received by: (Signature)	Temp: <b>A2degC</b>	Bottles Received: <b>0.4L ± 0.5</b>	<b>48</b>	<b>pH Adj 9/3 14:17</b>
Date: <b>9/3/21</b>	Time: <b>8:02</b>	Received for lab by: (Signature)	Date: <b>9/3/21</b>	Time: <b>8:02</b>	Hold: _____	Condition: <b>NCF / OK</b>



# ANALYTICAL REPORT

September 17, 2021

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

## Ramboll US Consulting, Inc. - Denver

Sample Delivery Group: L1398920  
Samples Received: 09/03/2021  
Project Number:  
Description: Former Murray Smelter

Report To: Joel Krech  
1999 Broadway Suite 2225  
Denver, CO 80202

Entire Report Reviewed By:

Darren Reeder  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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Cp: Cover Page	1	<sup>1</sup> Cp
Tc: Table of Contents	2	<sup>2</sup> Tc
Ss: Sample Summary	3	<sup>3</sup> Ss
Cn: Case Narrative	4	<sup>4</sup> Cn
Sr: Sample Results	5	<sup>5</sup> Sr
DRUM-1-210902 L1398920-01	5	
Qc: Quality Control Summary	6	<sup>6</sup> Qc
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# SAMPLE SUMMARY

DRUM-1-210902 L1398920-01 Waste			Collected by	Collected date/time	Received date/time	
			Joel Krech	09/02/21 09:15	09/03/21 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1737657	1	09/09/21 14:37	09/09/21 14:37	IDW	Mt. Juliet, TN
Mercury by Method 7470A	WG1738243	1	09/10/21 11:32	09/10/21 19:13	BMF	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1738282	1	09/10/21 13:50	09/11/21 01:56	KMG	Mt. Juliet, TN

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> Gl
- <sup>8</sup> Al
- <sup>9</sup> Sc

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Darren Reeder  
Project Manager

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> GI
- <sup>8</sup> AI
- <sup>9</sup> Sc

DRUM-1-210902

Collected date/time: 09/02/21 09:15

## SAMPLE RESULTS - 01

L1398920

## Preparation by Method 1311

Analyte	Result	<u>Qualifier</u>	Prep date / time	Batch	<sup>1</sup> Cp
TCLP Extraction	-		9/9/2021 2:37:35 PM	WG1737657	
Fluid	1		9/9/2021 2:37:35 PM	WG1737657	
Initial pH	N/A		9/9/2021 2:37:35 PM	WG1737657	
Final pH	N/A		9/9/2021 2:37:35 PM	WG1737657	

## Mercury by Method 7470A

Analyte	Result	<u>Qualifier</u>	RDL	Limit	Dilution	Analysis date / time	Batch	<sup>2</sup> Tc
	mg/l		mg/l	mg/l				<sup>3</sup> Ss
Mercury	ND		0.0100	0.20	1	09/10/2021 19:13	<a href="#">WG1738243</a>	<sup>4</sup> Cn

## Metals (ICP) by Method 6010B

Analyte	Result	<u>Qualifier</u>	RDL	Limit	Dilution	Analysis date / time	Batch	<sup>5</sup> Sr
	mg/l		mg/l	mg/l				<sup>6</sup> Qc
Arsenic	1.10		0.100	5	1	09/11/2021 01:56	<a href="#">WG1738282</a>	<sup>7</sup> Gl
Barium	0.138		0.100	100	1	09/11/2021 01:56	<a href="#">WG1738282</a>	
Cadmium	ND		0.100	1	1	09/11/2021 01:56	<a href="#">WG1738282</a>	
Chromium	ND		0.100	5	1	09/11/2021 01:56	<a href="#">WG1738282</a>	
Lead	ND		0.100	5	1	09/11/2021 01:56	<a href="#">WG1738282</a>	<sup>8</sup> Al
Selenium	ND		0.100	1	1	09/11/2021 01:56	<a href="#">WG1738282</a>	
Silver	ND		0.100	5	1	09/11/2021 01:56	<a href="#">WG1738282</a>	<sup>9</sup> Sc

## QUALITY CONTROL SUMMARY

L1398920-01

## Method Blank (MB)

(MB) R3703038-1 09/10/21 18:41

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.00330	0.0100

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## Laboratory Control Sample (LCS)

(LCS) R3703038-2 09/10/21 18:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Mercury	0.0300	0.0332	111	80.0-120	

## Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3703038-3 09/10/21 18:53 • (MSD) R3703038-4 09/10/21 18:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Mercury	0.0300		0.0328	109	107	1	75.0-125			1.68	20

## Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3703038-5 09/10/21 18:59 • (MSD) R3703038-6 09/10/21 19:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Mercury	0.0300	ND	0.0329	0.000	110	1	75.0-125	J6	J3	200	20

## QUALITY CONTROL SUMMARY

[L1398920-01](#)

## Method Blank (MB)

(MB) R3703087-1 09/11/21 01:17

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.0330	0.100
Barium	U		0.0330	0.100
Cadmium	U		0.0330	0.100
Chromium	U		0.0330	0.100
Lead	U		0.0330	0.100
Selenium	0.0621	J	0.0330	0.100
Silver	U		0.0330	0.100

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc

## Laboratory Control Sample (LCS)

(LCS) R3703087-2 09/11/21 01:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Arsenic	10.0	9.73	97.3	80.0-120	
Barium	10.0	9.86	98.6	80.0-120	
Cadmium	10.0	9.81	98.1	80.0-120	
Chromium	10.0	9.70	97.0	80.0-120	
Lead	10.0	9.89	98.9	80.0-120	
Selenium	10.0	10.1	101	80.0-120	
Silver	2.00	1.75	87.6	80.0-120	

<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

## L1398709-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398709-02 09/11/21 01:22 • (MS) R3703087-4 09/11/21 01:27 • (MSD) R3703087-5 09/11/21 01:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits
Arsenic	10.0	ND	9.85	9.89	98.5	98.9	1	75.0-125		0.382	20
Barium	10.0	1.79	11.4	11.6	96.2	98.1	1	75.0-125		1.66	20
Cadmium	10.0	ND	9.87	9.87	98.7	98.7	1	75.0-125		0.0567	20
Chromium	10.0	ND	9.67	9.68	96.7	96.8	1	75.0-125		0.0777	20
Lead	10.0	ND	9.84	9.88	98.4	98.8	1	75.0-125		0.346	20
Selenium	10.0	ND	10.2	10.2	102	102	1	75.0-125		0.416	20
Silver	2.00	ND	1.77	1.77	88.6	88.6	1	75.0-125		0.0768	20

## QUALITY CONTROL SUMMARY

[L1398920-01](#)

## L1399075-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399075-02 09/11/21 01:33 • (MS) R3703087-6 09/11/21 01:35 • (MSD) R3703087-7 09/11/21 01:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	10.0	0.207	10.7	10.5	105	103	1	75.0-125			2.07	20
Barium	10.0	ND	10.1	9.89	101	98.9	1	75.0-125			1.69	20
Cadmium	10.0	ND	9.75	9.58	97.5	95.8	1	75.0-125			1.73	20
Chromium	10.0	ND	10.1	9.93	101	99.3	1	75.0-125			1.42	20
Lead	10.0	ND	9.44	9.26	94.4	92.6	1	75.0-125			1.84	20
Selenium	10.0	0.531	12.9	12.7	124	122	1	75.0-125			1.53	20
Silver	2.00	ND	1.72	1.69	85.9	84.5	1	75.0-125			1.64	20

<sup>1</sup>Cp<sup>2</sup>Tc<sup>3</sup>Ss<sup>4</sup>Cn<sup>5</sup>Sr<sup>6</sup>Qc<sup>7</sup>Gl<sup>8</sup>Al<sup>9</sup>Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

**Results Disclaimer -** Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier      Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey—NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio—VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Company Name/Address:

**Ramboll US Consulting, Inc. - Denver**2225  
1999 Broadway Suite 1005  
Denver, CO 80202

Billing Information:

Accounts Payable  
PO Box 4229  
Indianapolis, IN 46242Pres  
ChkReport to:  
**Joel Krehc**Email To: **SSREYNOLDS@Ramboll.com  
jkrehc@ramboll.com;jmyers@ramboll.com**Project Description:  
**Former Murray Smelter**City/State  
Collected:**Murray VT**Please Circle:  
**PT MT CT ET**Phone: **303-382-5474**

Client Project #

Lab Project #

**ENVIRONCO-QC3**

Collected by (print):

**Joel Krehc**

Site/Facility ID #

P.O. #

Collected by (signature):

**Joel Krehc****Rush? (Lab MUST Be Notified)**

Same Day  Five Day   
 Next Day  5 Day (Rad Only)   
 Two Day  10 Day (Rad Only)   
 Three Day

Quote #

Date Results Needed

**10-Days**No.  
of  
CntrsImmediately  
Packed on Ice N  Y 

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

Cntrs

DRUM-1-210902

**Comp****SS****N/A****9/2/21****09/15****2****X**

\* Matrix:

SS - Soil AIR - Air F - Filter

GW - Groundwater B - Bioassay

WW - WasteWater

DW - Drinking Water

OT - Other \_\_\_\_\_

Remarks: **Drum 1-210902 is composite groundwater**

pH \_\_\_\_\_ Temp \_\_\_\_\_

Flow \_\_\_\_\_ Other \_\_\_\_\_

Sample Receipt Checklist

COC Seal Present/Intact:  NP  Y  NCOC Signed/Accurate:  Y  NBottles arrive intact:  Y  NCorrect bottles used:  Y  NSufficient volume sent:  Y  N

If Applicable

VOA Zero Headspace:  Y  NPreservation Correct/Checked:  Y  NRAD Screen <0.5 mR/hr:  Y  N

Relinquished by (Signature)

Samples returned via:  
 UPS  FedEx  Courier \_\_\_\_\_

Tracking #

Relinquished by (Signature)

Date: **9/2/21** Time: **10:45**

Received by: (Signature)

Trip Blank Received: Yes  No 

HCl / MeOH

TBR

Relinquished by (Signature)

Date: **9/2/21** Time: **17:00**

Received by: (Signature)

Temp: **17°C** Bottles Received: **2****0.4 + .1 = 0.5**

If preservation required by Login: Date/Time

Received for lab by: (Signature)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received for lab by: (Signature)

Date: **9/3/21** Time: **8:00**

Hold: \_\_\_\_\_

Condition: \_\_\_\_\_

NCF /  OK

Chain of Custody Page \_\_\_\_ of \_\_\_\_

**Pace Analytical®**  
12065 Lebanon Rd Mount Juliet, TN 37122  
Submitting a sample via this chain of custody  
constitutes acknowledgment and acceptance of the  
Pace Terms and Conditions found at:  
<https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

**C100**

Table # \_\_\_\_\_  
Acctnum: **ENVIRONCO**  
Template: **T168921**  
Prelogin: **P868014**  
PM: **296 - Darren Reeder**  
PB: **CS 8/19/21**  
Shipped Via: **FedEX Ground**  
Remarks \_\_\_\_\_ Sample # (lab only) \_\_\_\_\_